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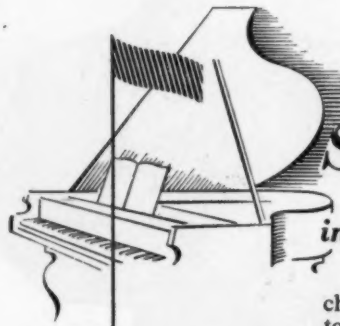

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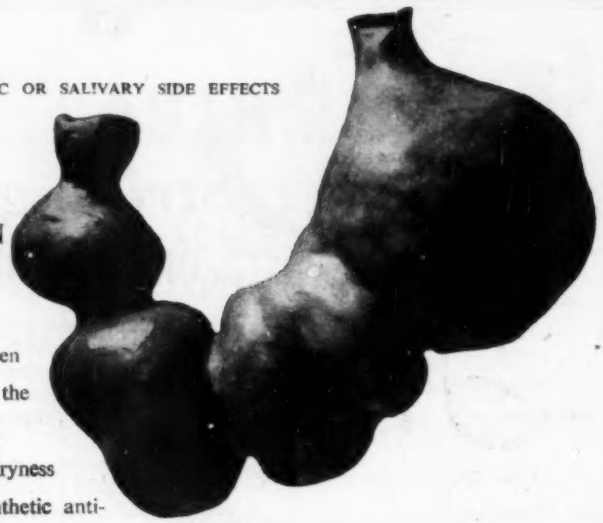

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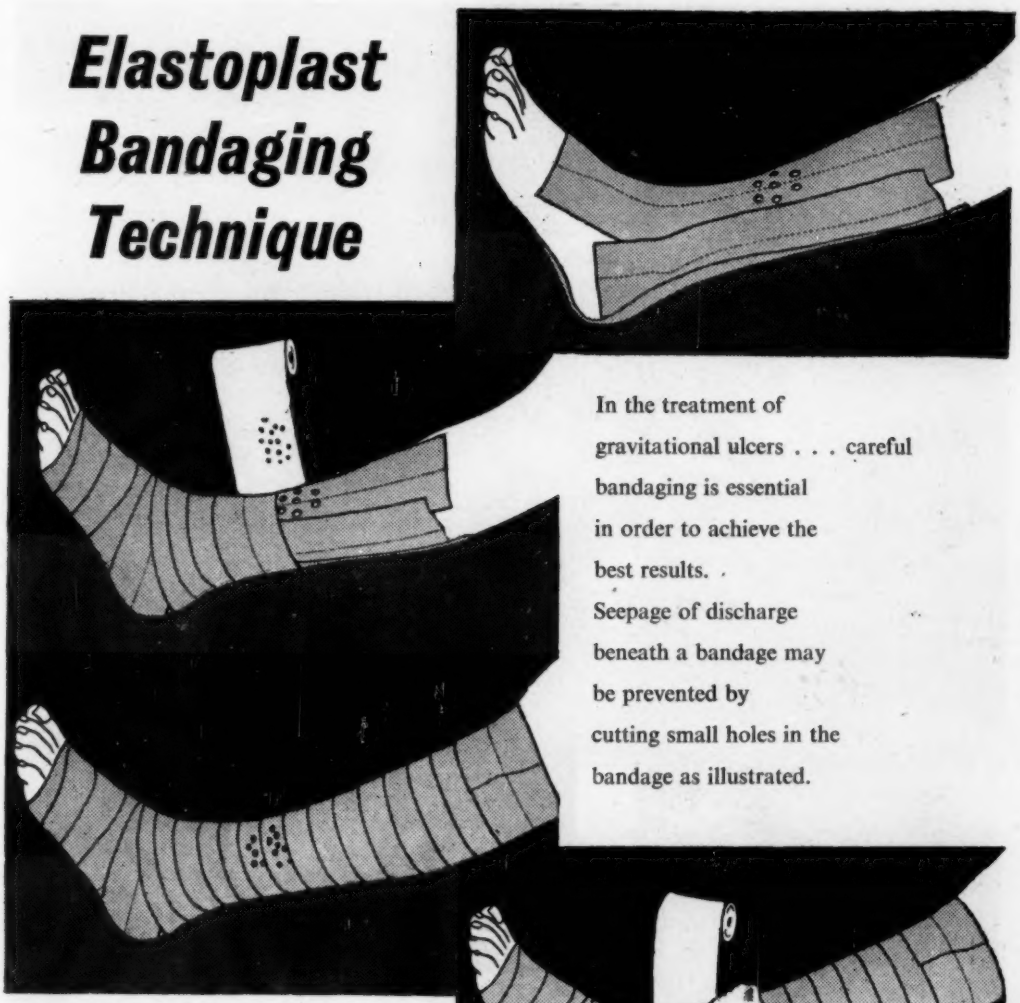

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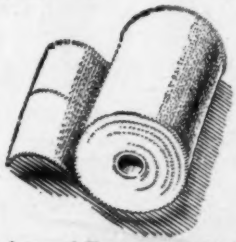

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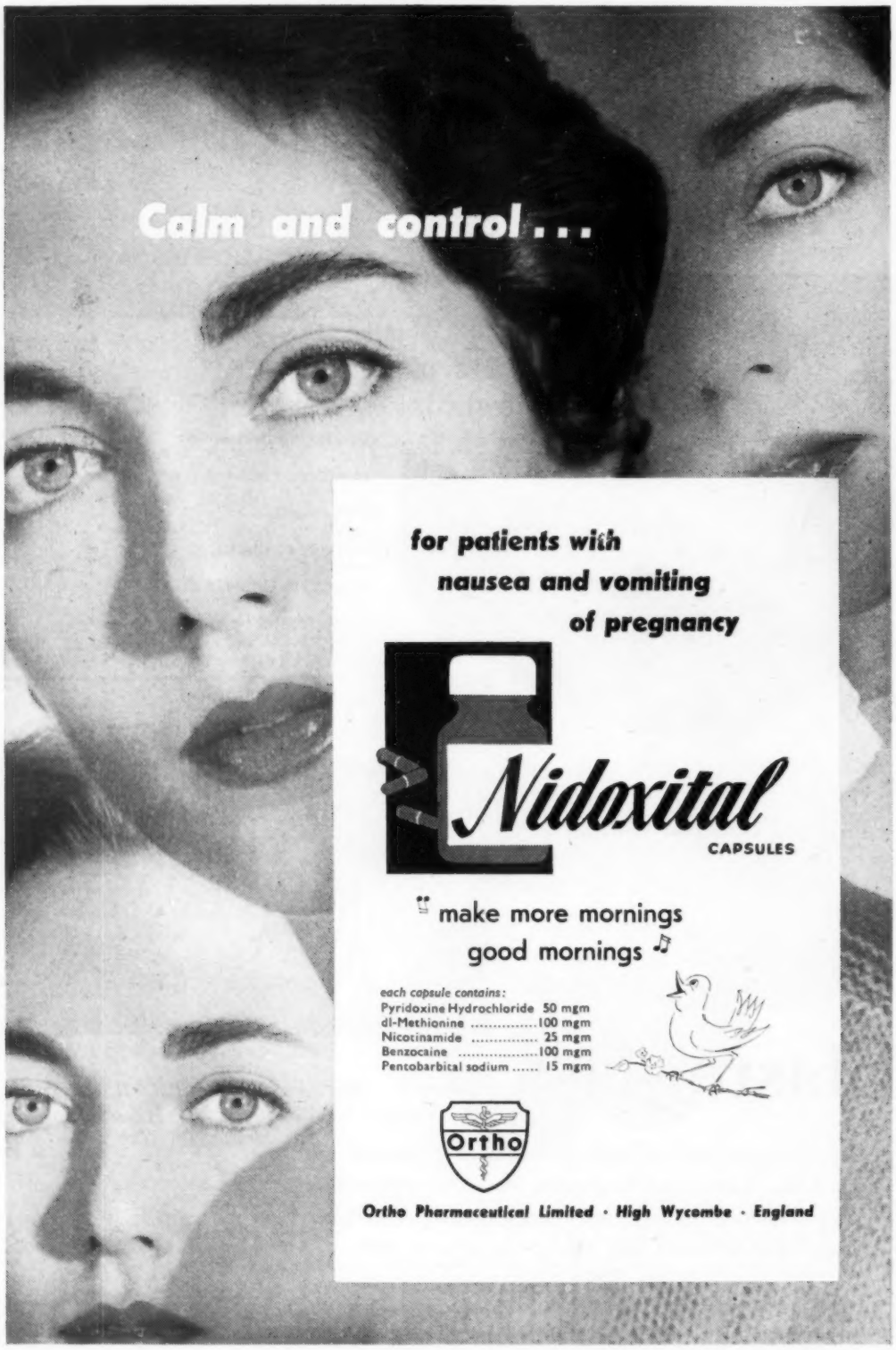
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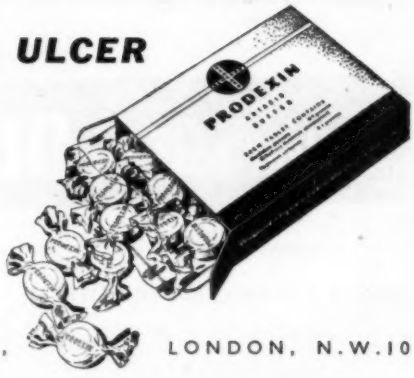

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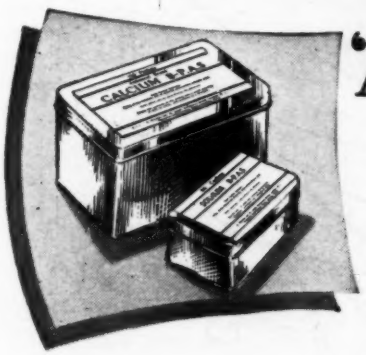

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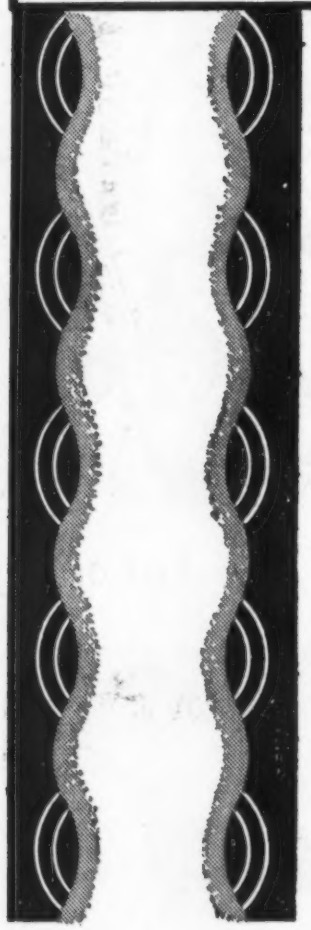

Senna is a neuro-muscular stimulant of peristalsis and produces a good imitation of normal defaecation. Such a physiological effect is of great value in restoring natural rhythm.

This is in marked contrast to the actions of salines and of liquid paraffin which have serious disadvantages for prolonged administration.

Through the production of Senokot, the first stable, standardised preparation of senna, the full therapeutic activity of the drug has been made available and its re-educative value demonstrated.

Senokot

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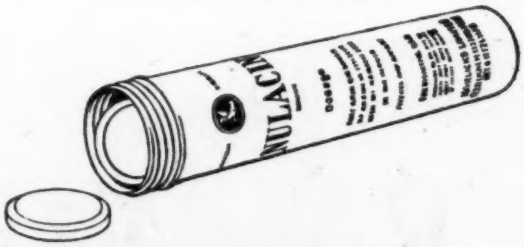
STANDARDISED SENNA GRANULES

Restores natural rhythm

Lancet, 1952, **1**, 655.
ibid 1953, **1**, 497 and 602.
Practitioner, 1953, **170**, 266.
Medical Press, 1954, **231**, 521.

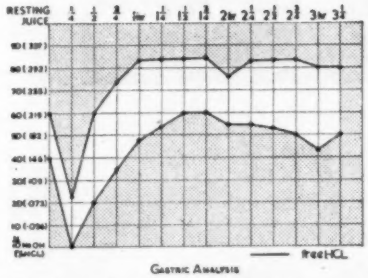
Dose: children ½—1, adults 1—2 teaspoonfuls.
Sizes: 2 oz., 6 oz.; dispensing pack of 2 lb.
Category 3: Joint Committee on Prescribing.
Senokot is not advertised to the public.

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1

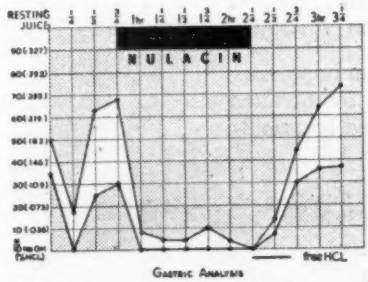


NULACIN

for successful peptic ulcer therapy



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

NEUTRALIZATION of gastric hyperacidity has long been acknowledged as the first requirement of successful peptic ulcer therapy. In the past it has only been possible to achieve this with milk-alkali drip therapy under hospital conditions.

Now NULACIN provides all the advantages of milk-alkali drip therapy without the discomfort of a tube and without inconvenience to the patient.

INDICATIONS

NULACIN tablets are indicated whenever neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

Beginning half-an-hour after food, a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly. During the stage of ulcer activity, up to three tablets an hour may be required. For follow-up treatment, the suggested dosage is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to pharmacists is 2/-). Also Available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium Trisilicate 3.5 grs.; Magnesium Oxide 2.0 grs.; Calcium Carbonate 2.0 grs.; Magnesium Carbonate 0.5 grs.; Ol. Menth. Pip. q.s.

BIBLIOGRAPHY:

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Clinical Investigation into the Action of Antacids. *The Practitioner*, July 1954, 173:46

NULACIN

is available throughout the British Commonwealth, in the U.S.A. and many other countries. It is known as Nulactin in Canada and Sweden.

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Because... Rauwiloid is free from the inert matter in the crude root and its undesirable substances (for instance yohimbine type alkaloids).

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* *Pharmacological Studies with Rescinnamine, a New Alkaloid Isolated from Rauwolfia serpentina, Proc. Soc. Exper. Biol. and Med.*, 1954, **86**, 120.

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PENIDURAL ORAL SUSPENSION 60 c.c.

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Motion Sickness

treatment or prophylaxis

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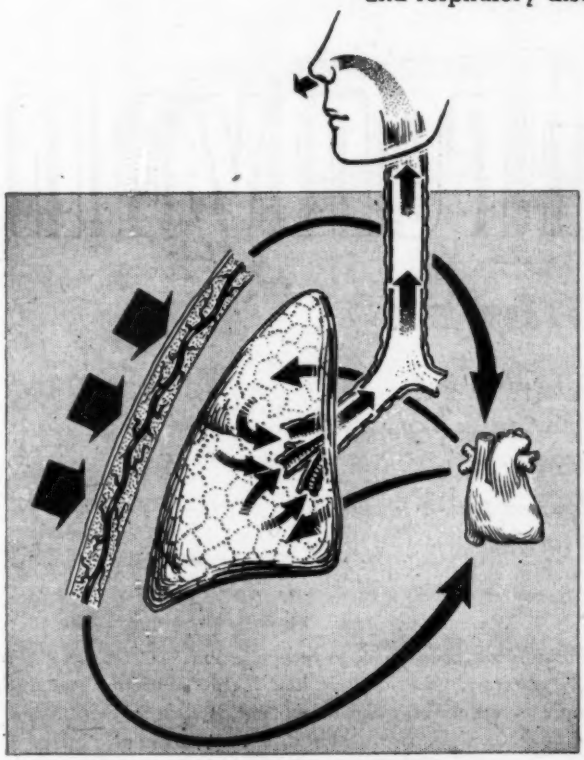

This diagram shows how Thoracin components penetrate the skin, are carried by the bloodstream to the alveoli and excreted there to exert their effect.

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Phenyl Ethyl Nicotinate	2.0% w/w
Guaiacol Furoate	5.0% w/w
Tetrahydrofurfuryl Salicylate	10.0% w/w
Camphor	3.0% w/w
Eucalyptol	2.0% w/w
Water-Miscible Base to	100.0%

▶ The Thoracin formula is based on the same principles that have made Transvasin so successful in the treatment of rheumatic conditions.

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▶ Thoracin achieves the effect of the classic counter-irritant remedies — poultices, plasters and cupping — without irritation of the skin.

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MADE BY THE MANUFACTURERS OF TRANSVASIN

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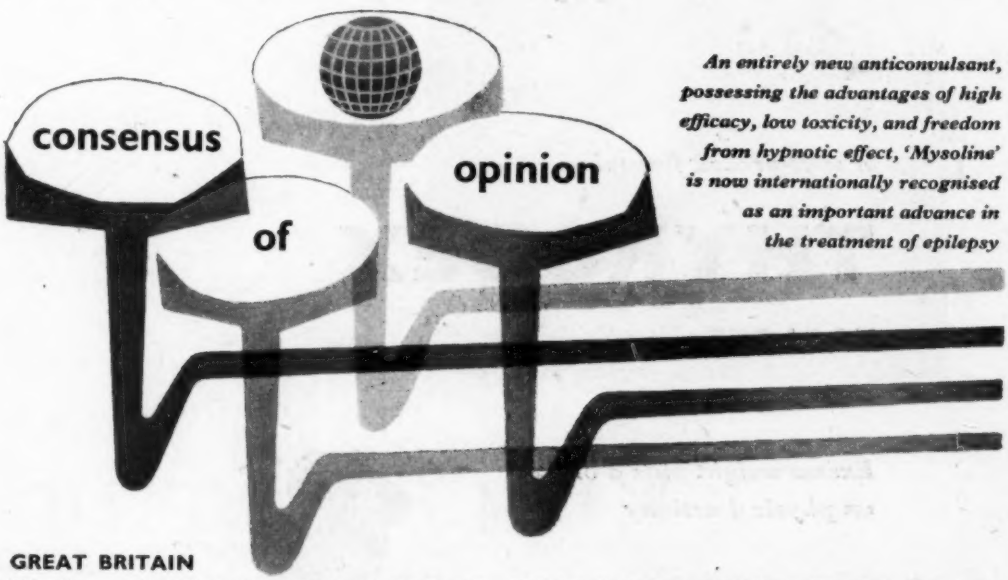

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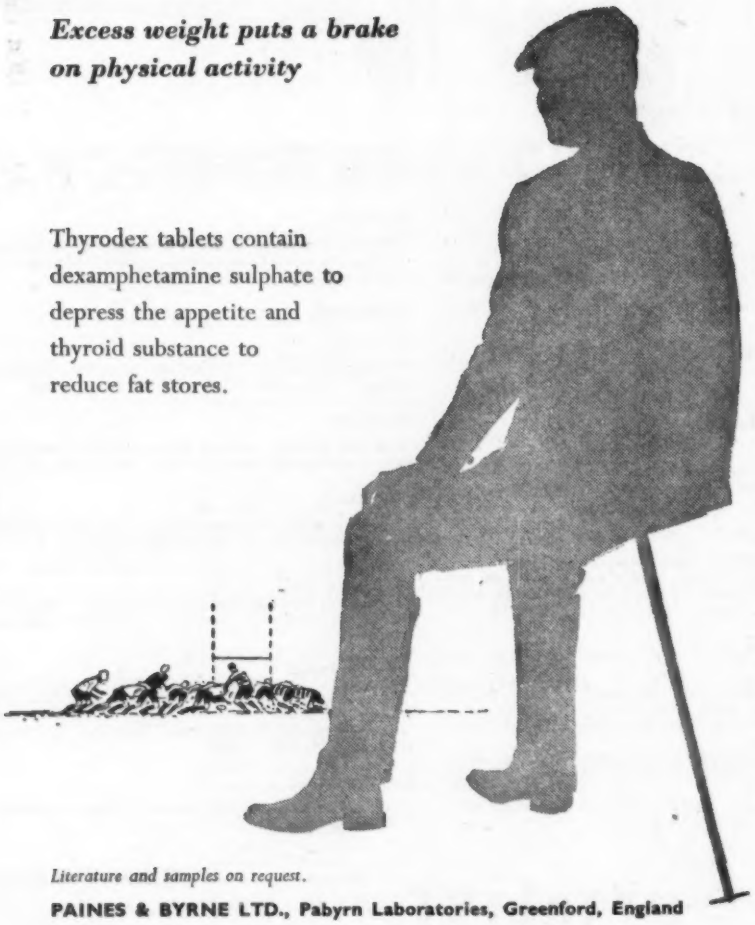

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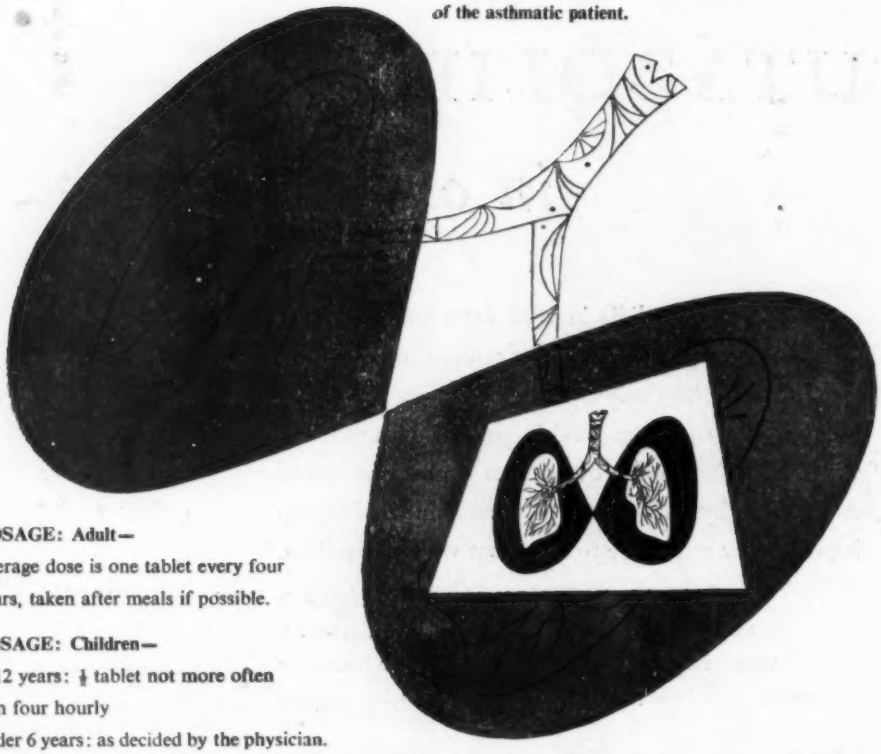

DOSAGE: Adult—
Average dose is one tablet every four hours, taken after meals if possible.

DOSAGE: Children—
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PACKING AND PRICES:
Tedral is supplied in bottles of 50 and 500 tablets. The dispensing pack of 500 Tedral tablets is supplied to chemists at 26/-, and 29/- each Enteric Coated.

TEDRAL ENTERIC COATED is also available to give symptomatic relief of asthma four hours after administration.

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Flavoured oral suspension for children in bottles to make 60 cc. (5cc.=100mg. 'Ilotycin').
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½ teaspoonful per stone bodyweight every six hours.

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FORMULA: *Each teaspoonful contains: Ferrous Gluconate 300 mgm., Aneurine Hydrochloride 1 mgm., Riboflavin 1 mgm., Nicotinamide 10 mgm.*

Packs: Bottles of 4, 20, 40, and 80 fl. ozs.
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FORMULA: *Each tablet contains: Ferrous Gluconate 300 mgm.*

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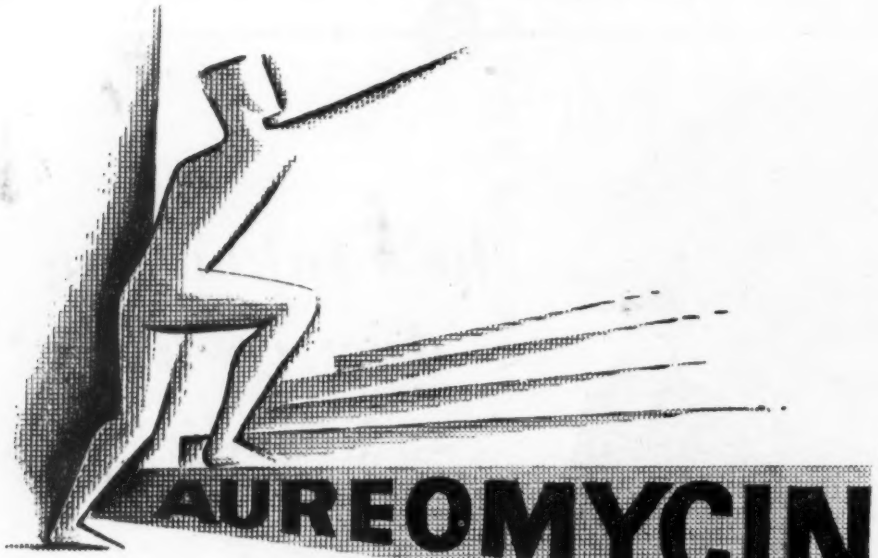

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MAN AS AN EXPERIMENTAL ANIMAL*

Sir GEOFFREY JEFFERSON
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THERE are some branches of research in which man is the pre-eminently suitable, in fact the only possible, subject. All have to do with the nervous system and especially those concerned with sensation, with pain, and with thinking.

Experiments on the Brain

The first operation for a brain tumour was performed on Nov. 25, 1884, and gave rise to discussions in the *Times*.

Someone signing himself "F. R. S." led off on Dec. 16 with a long letter describing in vivid terms what had happened. It seemed to him to be a wonderful opportunity for a telling reply to the Bishop of Oxford and John Ruskin, who had just spoken strongly against what was so curiously called "vivisection." The point about the famous operation was that the situation of the tumour had been localised to the upper part of the motor area by a comparison between, on the one hand, the patient's symptoms and signs, and on the other hand the maps of cortical localisation which resulted from the animal experimentation of the Germans, Fritsch and Hitzig, and, more still, of David Ferrier. "F. R. S.," had a picturesque literary style which you can savour from the following extract from a very long letter descriptive of the steps of the logical application of experimentally verified facts:

"While the Bishop of Oxford and Professor Ruskin were, on somewhat intangible grounds denouncing vivisection at Oxford last Tuesday afternoon, there sat at a window of the Hospital for Epilepsy and Paralysis in Regent's Park in an invalid chair, propped up with pillows, pale and careworn but with a hopeful smile on his face, a man who could have spoken a really pertinent word upon the subject and told the right Rev. prelate and great art critic that he owed his life, and his wife and children their rescue from bereavement and penury to some of these experiments on living animals which they so soundly condemned."

The Bishop of Oxford replied on Dec. 19 that "if a perfect knowledge of the secrets of the human frame is desired in the interests of mankind, let mankind be the victims." These letters led to a shower of further letters, five on Christmas Day, mostly in support of "F. R. S." "F. R. S." had to add a further note on Dec. 26 saying that the poor man was dead (of infection). In a long leader on Dec. 27 the *Times* took the view that in spite of the eventual fatality Rickman Godlee's experimental operation had been fully justified and that the gateway to cerebral surgery had been opened. This was an important pronouncement and true. Do I need to add that on Dec. 26 there was a letter from James Whitson, assistant surgeon to the Glasgow Royal Infirmary, saying that this was not the first operation on the brain for tumour, that a Scotsman, William Macewen, had got there first? Whitson was quite correct. Then letters had to vie for place with news of Mr. Gladstone's 75th birthday, letters on "The state of the business at nisi prius," and scandalised objections to some undraped figures in Alfred Steven's designs for the decorations of the dome of St. Paul's—designs that had the weighty commendation of Sir Frederick (later Lord) Leighton and Mr. (later Sir) E. J. Poynter—men whose artistic rating was nearly as high then as that of Velasquez and Raphael.

So we see that remarkable experiment come and go, to lead to more in the fullness of time than *The Lancet* had lugubriously prophesied for it in its leader on Nov. 10, 1883. *The Lancet* held that acceptance of the laboratory discoveries was not unanimous and that the facts themselves were somewhat confusing (as indeed they were). The leader proceeded:

"But it must be confessed that the aid localisation has afforded to treatment has been small and practically confined to cases of surgical interference. Even of these cases there are very few—scarcely more than could be counted on the fingers on one hand—in which the power of localising cerebral disease can be said to have been the means of saving a life that would have been lost without it."

It concluded with these minatory words:

"If Dr. Ferrier's suggestions meet with much practical response, it is to be feared that cerebral localisation will soon have more deaths to answer for than lives to boast of."

These lines were evidently written either by a physician or a pessimist; the author could, of course, have been both.

We see, then, that these experiments on man had the mixed reception that we should have expected at that date. It required the courage of a man like Sir Victor Horsley, and after him Harvey Cushing, to silence opposition and to win the confidence of the world.

All operations are of their nature experimental; the statistical results are broadly known and from them the general impersonal risks can be calculated. In some, what concerns us most is danger to life itself: in others fatality can be almost excluded and the experimental side depends on the success that can be expected, the relief that can be anticipated in the individual instances. No statistics have so personal a message. If it comes to that, all medical treatment is also experimental. As Professor Pickering has pointed out, the prescription even of rest in bed for two or three weeks, or of a bottle of cough mixture, are experiments, the results of which deserve closer observation and quantitative analysis than they get.

Sensation

I mentioned just now that man was the only suitable animal for experiments on sensation and on pain. It was by regarding closely the stages of sensory and motor recovery after nerve suture that what we call generally "sensation" was broken down into a number of components (light touch, the recognition of pain, pressure, temperature, localisation of the point touched, and so forth). It seemed to Henry Head, who was deeply interested in this subject, that he would appreciate the whole thing better if he had some nerves cut in his own left arm. This was done by Dean and Sherren of the London Hospital in 1904. Head chose what he thought were purely cutaneous nerves and came to some wrong conclusions by that mistake, as J. S. B. Stopford pointed out. His other mistakes in interpretation have been pilloried by F. M. R. Walshe. The correctness or otherwise of Head's results is beside the present point, which is that he decided to turn himself into his own experimental animal. Wilfred Trotter and Morriston Davies followed suit shortly afterwards and arrived at conclusions that have stood much better the test of time. Since then the personal experiment has been applied by other research-workers.

THE PAIN OF CANCER

A constant problem for the neurosurgeon is the pain of malignant invasion of the skeletal tissues in various forms, especially in cancer of the uterus and prostate. How to help these sufferers to whom peace cannot sufficiently be brought by morphine? Foerster in Breslau divided the posterior or sensory roots or the spinal nerves without giving much relief to patients with pain of any

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origin—relief, that is, commensurate with the disadvantages of denervating large areas of skin and muscle. As a by-product Foerster was able to plot the nerve-supply of the different dermatomes of man in as definitive a way as is possible with something a trifle individually variable. By stimulating the distal ends of the nerves he showed for the first time the vasodilatation of the vessels of the skin of the relevant spinal segment. One has the feeling in reading his reports (as one had in conversation with him) that Foerster was basically an experimental physiologist rather than a therapeutist and that he chose his cases sometimes with a view to filling in a missing space in his collection of fact.

A much better piece of physiology was already on the way when Foerster was doing these operations—the operation of cordotomy. However Foerster had had a part in that as well, having persuaded Tietze to do, and successfully, this operation.

A fortunate chance fell to Spiller in Philadelphia, who observed that a coloured patient in his hospital was numb to pain and temperature up to a level on his trunk, without paralysis. The sense of touch and pressure was retained. This patient had tuberculosis and shortly died. At the post-mortem two very small tuberculous nodules were found symmetrically placed in the spinal cord in the situation of the spinothalamic tracts. There had been other suggestive evidence, notably that of Türck of Vienna, suggesting that these fibres were responsible for the transmission of pain. Spiller at once saw the possibility of turning the misfortune of his patient to the good of others. He persuaded a surgeon, Martin, to divide this part of the spinal cord in another person with unbearable pain. The result was so great a success that the operation has since become a standard one.

The optimum sites of the partial spinal sections have been worked out in recent years with great diligence by J. C. White of Boston, plotting the effect of limited sections of the cord under local anæsthesia. No approach to the operation which is not of an experimental nature is likely to be long successful. More recently still Talairach and David in Paris have tried the effects of destruction of the chief nuclei for the reception of pain in the brain itself by destroying them by electrocoagulation. These are essentially human experiments of a high order and involve the use of the Horsley-Clark stereotactic apparatus to which we shall shortly come back.

Experimental vertical sections of the human spinal cord to relieve pain in the upper limbs were made by Donald Armour in London and Tracy Putnam in New York. They have been used by the French for pelvic cancers also. But these, though highly experimental in the case of man, were no more than applications of some animal experiments by Brown-Séquard long ago, experiments that led Brown-Séquard to some quite wrong conclusions about sensation, since he equated "sensation" with "pain" and little else.

VISCERAL PAIN

Other revelatory experiments on pain in man are those on visceral pain. Such were the old observations of Lennander that crushing and burning the intestine and gall-bladder were quite painless, whereas traction on the mesentery was not. John Morley investigated the agonising shoulder-tip pain experienced by some patients with general peritonitis or chemical peritoneal inflammation such as follows the perforation of a gastric or duodenal ulcer. He scrubbed the under surfaces of the diaphragm with gauze and abolished the referred pain by experimental procaine block of the nerves supplying the shoulder-tip area.

Along the same line were the experiments pursued by Hurst and others of having patients or medical students swallow inflatable bags. F. H. Bentley and Smithwick, using that technique, showed that the pain of duodenal distension was abolished by section of the splanchnic nerves. The result of important researches by several investigators was to show that distension and traction were the chief causes of visceral pain, the peripheral reference of which had been so acutely observed at the bedside by James Mackenzie of Burnley fifty years ago, and more cogently by Sir Thomas Lewis.

No-one indeed worked with more whole-hearted zeal in observation on the character and reference of pain in human beings than Sir Thomas Lewis—the defender as it were of "clinical science," a term invented by Stephen Paget's father. He accepted no interpretation of symptoms that he could not experimentally verify on the living subject. This one sentence gives no idea of the years he spent on painstaking work, and his observations on the pains of angina pectoris and of other visceral and limb pains are classical. No less were those of J. H. Kellgren who explored the pains arising in muscles, fasciæ, and the ligaments of joints by injecting small amounts of hypertonic saline into these structures and observing the site, often at a distance, of the severe but temporary pain that followed. He has told that he had some 1000 painful injections of one sort or another to find their effect. Usually Kellgren was his own or Lewis's test animal. None of this work could have been done on animals since the whole point was the description of the character of the pain, its situation in relation to the position of the causal agent and its relation to the nature of the stimulus.

HEADACHE

No better example of experiment on man could be found than in the investigation into the causes of headache by the planned production of pain in the head. Notable researches have been those of G. W. Pickering, D. W. C. Northfield, and H. G. Wolff and Bronson Ray and other collaborators, though many besides have added their quotas.

These all confirmed the ancient observation that the brain itself is quite insensitive, but they added something new. It was that the stimulation of the cerebral blood-vessels and some of the brain's coverings by direct or indirect means led to referred pain somewhere on the head's surface but according to the site of the stimulation. It was shown that the violent but short-lived headache that follows histamine injection is accompanied by dilatation of the cerebral vessels and by a pronounced increase in the amplitude of their pulsations. It was further shown by Pickering and Hess that there the intensity of the headache corresponded with the degree of pulsation, being most severe when pulsation was greatest.

This relation between a sort of slackness of the central vascular system and headache was confirmed by another series of observations that had results that were surprising to many. It was demonstrated that the surest way to give a person a headache was to lower the intracranial pressure by draining off cerebrospinal fluid. On the contrary, raising the pressure by lumbar injection of saline into a normal person, even to five times and more the normal, as I have done myself, does not cause headache. Evidently, then, the headache of a brain tumour or abscess or blood-clot is not due to raised pressure alone; for some pressures experimentally reached were far above those registered by most brain tumours.

It is generally agreed that tumour headache is caused by distortion of normal intracranial relationship and is due either to traction on dural septa or to drag on vessels and on the sensory cranial nerves, of which, of course, the trigeminal has the widest supply. Some of the human experiments were daring, such as those of Ray

and Wolff who introduced inflatable rubber balloons into the third and into the lateral ventricles of conscious patients and charted the sites of their induced headaches.

The common headache of mankind, migraine and pseudo-migraine, is due to dilatation of the vessels in the scalp, bone, and dura mater. In these cases the cerebrospinal fluid pressure is never high, and most relief can be obtained by the use of vasoconstrictors of the ergotamine group which, it has been shown, have more effect on the extracranial arteries than on those inside the dura. I cannot here discuss more widely this commonest of the pains to which mankind is heir. But enough has been said to make plain how much these workers have done to clarify a subject that was full of confusion and of conjecture until experimental recourse was made to the right animal—man himself.

Stimulation of the Cerebral Cortex

Present-day views on epilepsy have been derived almost entirely from experiments on man. The great protagonists have been first Victor Horsley, and then Ottfrid Foerster and Krause, who got only so far. Much more fruitfully have worked Wilder Penfield and Herbert Jasper and their co-workers in the Montreal Neurological Institute.

The new observations take origin not only from electrical stimulation of the surface of the brain—even of its less exposed parts—in conscious patients, but also from direct recordings of electric potentials from the exposed brain surface, in the search for damaged areas such as could be regarded as the "discharging lesions" (in Hughlings Jackson's phrase) or their synonym "epileptogenic foci." The discovery and excision of these areas has led to many cures.

Cortical stimulation to map out the site of the motor area is now a commonplace of neurosurgery and has been employed by myself and by too long a list of neurosurgeons for them to be named. It was early used by Victor Horsley, as he reported in 1888, and again in 1909, to mark out the exact piece of brain that needed removal in focal epileptic attacks or the wild involuntary movements of a man's arm. That was a straightforward piece of physiology—the application of Ferrier's work and the much more acute observations of Sherrington, which had, to be sure, not yet seen its final fruition with the anthropoids.

More exciting were the two cases published in 1909 by Harvey Cushing on sensations resulting from stimulations of the post-Rolandic area in man. Operating under local anæsthesia he established the sensory function of the human postcentral strip. Penfield, since that day forty-six years ago, has greatly extended these observations on both the motor and sensory and other responsive areas of the brain. His maps of the excitable cortex will eventually it is to be hoped supplant those of the cat and monkey so much more beloved of physiologists because they have been their laboratory familiars.

Ferrier many years ago said that all parts of the cortex would prove to be excitable, but he could not demonstrate excitability himself except from restricted areas of the brain: the greater part was unresponsive. Ferrier's prophecy was long unfulfilled, and only recently has come closer to confirmation. Thus we now know that responses must be looked for not only in movements of the limbs or in sensations or in flashes of light or sounds or odours but in two other directions. The first is in the autonomic or visceral changes that may be the replies to stimulation of some areas (changes in heart-rate, respiration-rate, blood-pressure, intestinal movements, &c.). This work has mainly been done on animals. The second and much the more exciting, even dramatic, discovery was made by Penfield—that stimulations of the temporal lobe in human beings may evoke experiences, pictures in the mind. An example may be given of the response of a woman of 32 who had epileptic fits of a minor sort. Each remark corresponds to a separate stimulus.

"I hear singing." "Yes, it is 'White Christmas.'" "There is an orchestra too . . . yes a choir," "That is different, a voice—talking—a man," "Yes, I have heard it before . . . a man's voice talking." "Yes about the same as before." "There is that sound again—like a radio programme—a man talking." She said that it was a play.

Results of a similar kind or the evocation of a familiar scene, a moment or two only in life, well accepted by the patient, in no way frightening but all with a considerable content and depth of experience have been obtained from other cases. But it is by no means anybody's brain that will yield such vivid experiences: confirmatory results by others must still be made. Something very like that can occur spontaneously in patients with temporal-lobe tumours.

The upshot of this and other work is that a seizure pattern has emerged recognisable as coming from one or other temporal lobe. It is very much to the point that these seizures, previously labelled psychomotor fits, are often caused by extensive scars from damage perhaps at birth. The excision of the scar and of anterior parts of the pathological temporal lobe has led to the cessation or great diminution in the frequency and severity of the attacks in a proportion claimed to be as high as 2 out of 3 cases. Murray Falconer has now had some success in improving not only the fits but the behaviour of delinquent children and young adults subject to this kind of seizure. Experiments carried out on man in the laudable attempt to relieve him of epilepsy has in many ways helped greatly in our interpretation of the brain's integration and of its mechanisms. It marks a major advance in man's understanding of himself.

The advance has been assisted by the explorations of frontal-lobe physiology. Our new knowledge has come about from again two sources—first major excisions of the frontal lobes of which I myself reported the first 8 European examples in 1937 and again 75 examples in 1942. Going still further Krynauw in Johannesburg reported in 1950 the first cases of removal of a cerebral hemisphere from children already hemiplegic and suffering from fits that started in the paralysed limbs. It was found that the mental state of these children was often improved by the loss of half of the brain's cortex, the remaining healthy half being no longer disturbed by the flow of disturbing impulses from the abnormal parts. This was much the same conclusion as I had reached myself from the lobectomies for brain tumour. Close on the heels of that came the rising popularity of prefrontal lobotomy and its modifications for mental disorders, which we owed to the inspiration, of Egas Moniz (1936). All this is very much in the field of human experiment. Equally experimental in their way were the introduction of the malarial treatment of general paralysis (Wagner-Jauregg 1917) and the insulin (Sakal 1927), metrazol (Meduna 1937), and electric-shock therapy (Carletti and Kalinowsky 1937) of the psychoses.

Conclusion

Plainly it would be unthinkable that man should be used widely in experiment on the propagation of dangerous infections. It seems indeed that he is only suitable as a test subject to those affections or diseases to which he alone is subject or in which his subjective responses to experiment are essential to the experiment itself. This is most true of the nervous system, and already his acceptance of himself in this experimental rôle has led to the illumination of many a dark corner. I am convinced that no surgeon is quite as conscious of the truly experimental nature of his work and of the opportunities it affords for physiological observations as the neurosurgeon.

PLASMA-17-HYDROXYCORTICOSTEROIDS IN PREGNANCY

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EVIDENCE suggests that during pregnancy the activity of the adrenal cortex is increased. The adrenal glands of women dying at or soon after delivery weigh more and have a larger cortex than those of non-pregnant women (Aschoff 1910, Aschner 1912, Huggett 1950). The urinary excretion of certain adrenocortical steroids ("glucocorticoids," "11-oxysteroids"), measured by biological and chemical methods, is increased during pregnancy (Venning 1946, Tobian 1949, Cope et al. 1951). Thus, using a bio-assay procedure, Venning (1946) found increased excretion of glycogenic steroids during the first trimester of pregnancy and a further increase during the subsequent months. In some instances there appeared to be a reduction in the amount excreted during the last month of pregnancy, and normal values were found shortly after delivery. None of the methods used gave a true estimate of the total amount of adrenocortical steroids excreted in urine, because of difficulties in hydrolysing the conjugates present (Bayliss 1952, Cope and Hurlock 1954).

In contrast with this evidence suggesting that increased amounts of adrenocortical C-21 steroids are elaborated in pregnancy, no increase in the excretion of androgenic or 17-ketosteroids has been observed by Dingemanse et al. (1937), Hain (1939), Pearlman and Pincus (1943), Venning (1946), and Jailer (1951). Although Venning (1946) found no increase in 17-ketosteroids when measured by the Pincus antimony-trichloride method, which is specific for saturated 17-ketones, there was an apparent increase when measured by the Zimmerman reaction, which determines both 17-ketones and 20-ketones, the latter being metabolites of progesterone, which is known to be formed in increased amounts during pregnancy. The most complete study of the excretion of 17-ketosteroids in pregnancy has been made by Huis in't Veld (1954), who found with the Zimmerman reaction that the excretion of total neutral 17-ketosteroids is slightly increased during pregnancy, being somewhat more during the first and third trimesters than during the second. Much of the increase during the third trimester was due to pregnanolones and to 11-keto-etiocholanolone and 11-hydroxyandrosterone—compounds believed to be metabolites of C-21 adrenocortical steroids.

While the present investigation was in progress, Gemzell (1953) reported his findings on the plasma level of 17-hydroxycorticosteroids in normal pregnancy: during the last trimester the concentration was four times the normal level, and very high values were found immediately post partum, but the concentration had returned to the normal range six days after delivery. No conclusion about the variation in individual response could be drawn, because the samples of blood were taken from different women at different times in their pregnancy. In the present investigation the plasma 17-hydroxycorticosteroids were studied in the same women at about monthly intervals throughout pregnancy and during the puerperal period.

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TABLE I—LEVELS OF 17-HYDROXYCORTICOSTEROIDS IN PLASMA IN PREGNANCY

Case no.	Age (yr.)	No. previous deliveries	17-Hydroxycorticosteroids (μg. per 100 ml.)															
			Months of pregnancy								Cord	Days post partum						
			3	4	5	6	7	8	9	10		1	2	3	5	7	8	21–56
1	24	0	..	17	22	35	26	31	40	42	30	42	..	..	..	..	15	..
2	24	1	4	..	20	38	23	39	25	..	..	..	37	..	..	16	..	..
3	22	0	..	13	..	43	41	45	38	36	24	..	23	..	..	..	..	9
4	27	0	23	21	20	30	21	27	21	37	18	..	..	..	..	..	28	..
5	23	0	..	25	22	..	33	26	23	29	..	37	..	..	..	..	2	..
6	36	1	5	..	13	23	15	18	17	37	..	..	19	..	..	..	9	16
7	21	0	..	5	16	18	28	25	21	32	..	..	..	..	..	..	4	..
8	21	1	..	..	..	9	10	25	26	32	..	..	..	..	..	..	..	7
9	28	2	..	..	..	6	9	13	20	29	..	..	..	..	..	..	..	8
10	28	0	..	8	17	24	28	30	22	30	50	..	..	..	..	10	..	..
11	32	0	..	11	5	9	30	20	31	16	..	..	..	..	..	..	..	..
12	33	1	..	15	17	20	11	30	28	11	..	..	..	..	..	..	..	12
13	30	2	..	7	5	19	33	18	16	23	..	..	..	..	..	..	7	..
14	29	1	4	11	12	15	12	13	22	..	..	..	..	27	..	..	..	7
15	21	1	5	11	23	27	24	22	..	23	21	22	..	..	..	12	..	11
16	33	1	8	13	26	14	18	23	27	26	..	..	..	10	..	7	..	..
17	28	1	14	22	24	18	10	24	29	22	16	18	..	..	16	..	..	..
18	35	0	..	9	21	15	12	17	18	26	..	14	..	..	22	..	..	5
19	29	1	14	16	26	21	..	24	19	24	39	..	7	..	9	..	..	..
20	27	1	8	11	15	28	22	..	8	18	..	..	10	..	..	..	3	..
21	28	2	..	..	9	7	26	24	18	15	12	..	..	..	..	..	11	7
22	19	0	..	5	23	19	23	14	14	21	28	..	..	..	..	..	3	..
23	29	3	..	9	8	23	16	20	22	12	..	..	..	..	..	..	..	3
24	20	0	17	21	16	11	..	16	..	23	30	17	..	..	..	..	..	4
25	27	0	21	15	17	18	10	13	26	20	40	..	22	..	..	..	14	..
26	33	3	..	..	13	21	..	21	21	16	..	..	..	..	..	..	7	..
27	17	0	8	16	15	21	..	13	18	19	29	..	..	9	..	10	..	..
28	30	1	3	11	16	18	19	19	20	15	22	..	9	..	..	..	..	6
29	29	1	..	..	5	3	..	18	16	12	17	..	..	..	..	..	4	..
30	24	1	..	14	13	15	..	11	15	18	21	..	12	..	..	..	8	..
Mean	..	..	10	13	16	20	21	22	22	24	27	25	17	15	16	11	9	8
Standard error of mean	..	..	1·9	1·1	1·2	1·7	1·8	1·5	1·3	1·6	2·7	4·8	3·6	5·8	3·8	1·5	2·0	1·1

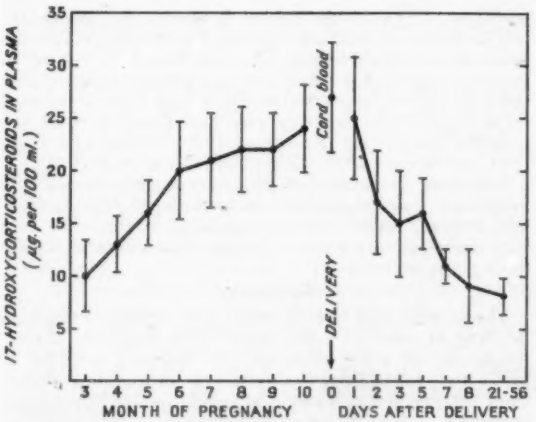

Fig. 1—Mean level (and standard deviation) of 17-hydroxycorticosteroids in plasma at each month of pregnancy and during puerperium in healthy women.

Material and Methods

Thirty-eight women attending the antenatal clinic for the first time in their present pregnancy were chosen at random. Eight subsequently developed complications, including toxæmia, anæmia, and hypertension, and have been excluded from this report. Of the remaining thirty who underwent a normal pregnancy twenty-nine were delivered spontaneously and one had a cæsarean section because of a contracted pelvis. Eighteen had borne children before (table 1).

Samples of blood were taken at the first attendance and thereafter at monthly intervals, all these antepartum samples being collected at about the same time in the afternoon. In fifteen instances blood was collected from the umbilical cord at the time of delivery, and further samples were taken from the mothers at various intervals thereafter.

The concentration of 17-hydroxycorticosteroids in the plasma was estimated by a modification of the method of Nelson and Samuels (1952) described by Bayliss and Steinbeck (1953). Compounds measured by this technique include cortisone, cortisol (hydrocortisone), and their dihydro- and tetrahydro- metabolic reduction products. The mean plasma value for healthy women is 9·5 μg. per 100 ml. with 95% fiducial limits of 3–16 μg. per 100 ml.

Results

The results are shown in table 1, the month of pregnancy being calculated from the time of delivery, and the mean levels of 17-hydroxycorticosteroids in the plasma of the thirty women at each month of pregnancy are shown in fig. 1. At the third month the level of 10 μg. per 100 ml. is the same as the mean value for non-pregnant women. Thereafter the level rises steadily, the highest level reached being 24 μg. per 100 ml. during the last month of gestation. At the time of delivery the level in the umbilical-cord blood was slightly higher than during the last month of pregnancy. Post partum the level in the maternal blood was high for twenty-four hours and then returned gradually to a normal level by the eighth day.

The individual patients, however, showed considerable variation from the mean values. In all of them the level of 17-hydroxycorticosteroids in the plasma rose, but in some (cases 1–13) it rose higher than 29 μg. per 100 ml. at some time during pregnancy, whereas in others (cases 14–25) it rose to only 21–28 μg. per 100 ml., and in three (cases 28–30) it did not exceed 20 μg. per 100 ml. Illustrative examples from each of these three arbitrary groups are shown in fig. 2. No clinical differences were noted between the patients with the high and with the lower levels.

In most instances the levels during the third and fourth months were within the normal range for non-pregnant women, but high values were found in some at this time. About half the patients had abnormally high levels by the fifth month, and others, although not having abnormally high levels, showed an increase above the values observed during the previous two months. During the last month of pregnancy there was in most instances a further increase or no significant change compared with the levels in the eighth and ninth months, but in seven patients a definite fall took place at this time (cases 3, 11, 12, 21, 23, 28, and 29).

Although the mean values for the cord blood and mother's blood in the last month of pregnancy were not significantly different, in eight cases the cord blood had a higher level, in five a lower, and in two there was no significant difference.

During the postpartum period there were considerable individual differences in the plasma-steroid levels. Most of the patients had abnormally high values for the first forty-eight hours after delivery. Two had raised levels after this time: one (case 14) on the third day and the other (case 18) on the fifth day. Case 4, who had unusually high levels at the third month of pregnancy, also had a high level on the eighth postpartum day; she was particularly anxious, and the high levels may have been related to emotional disturbances.

No correlation was found between the height of the 17-hydroxycorticosteroid level during pregnancy and the weight of the placenta or of the baby at birth.

Discussion

These results show that in pregnancy the level of 17-hydroxycorticosteroids in the plasma is raised, in some cases to levels exceeding those found in patients with Cushing's syndrome (Perkoff et al. 1954, Bayliss and Steinbeck unpublished).

At least two problems remain unanswered: what is the nature of the material which is present in increased amounts, and what is its origin?

Nature of Material

The chemical method used for the estimation of 17-hydroxycorticosteroids is relatively specific for 17:21-dihydroxy-20-ketosteroids such as cortisone, cortisol, and their dihydro- and tetrahydro- derivatives. We have found that in healthy non-pregnant women the plasma-

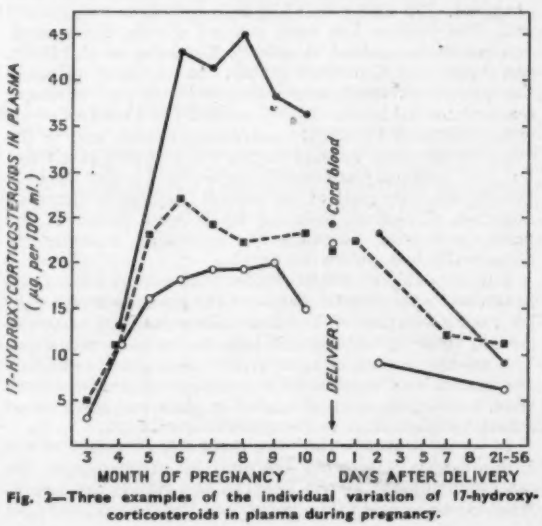

Fig. 2—Three examples of the individual variation of 17-hydroxycorticosteroids in plasma during pregnancy.

17-hydroxycorticosteroid levels are a measure of the amount of cortisol and also more polar derivatives—e.g., tetrahydrocortisone. Without further chemical analysis it is impossible to say what is the exact nature of the material measured in the plasma of pregnant women, but by paper chromatography Bush (1953) has found increased amounts of cortisol in the blood of such patients.

Origin of Increased 17-Hydroxycorticosteroids

If the site of origin were either the fœtus or the placenta, the steroid levels in the mother would be expected to fall more rapidly after delivery than they do. For example, after a single dose of cortisol acetate 200 mg. by mouth the plasma level of 17-hydroxycorticosteroids falls from a maximum of more than 100 μg. per 100 ml. to normal levels within eight hours (Nelson et al. 1952). In newborn infants the urinary excretion of 17-ketosteroids, glycogenic corticoids, and reducing steroids, and the plasma level of 17-hydroxycorticosteroids are low (Talbot et al. 1943, Day 1948, Venning et al. 1949, Klein et al. 1954). Since Klein et al. (1954) have found low 17-hydroxycorticosteroid levels in the blood of newborn infants but, like us, high levels in most samples of umbilical-cord blood, it seems reasonable to deduce that the high level in the cord blood results from the high concentration in the maternal circulation, and that the hormones pass

TABLE II—LEVELS OF 17-HYDROXYCORTICOSTEROIDS IN PLASMA AT CÆSAREAN SECTION

Case no.	17-Hydroxycorticosteroids (μg. per 100 ml.)	
	Antecubital vein	Placental sinus and uterine blood
31	55	45
32	46	48
33	35	19
34	56	42
		42*

* Specimen obtained from an anterior uterine vein before uterus was opened.

readily across the placental barrier. Although small amounts of adrenocortical hormones have been found in placental extracts, it is impossible to tell whether these were produced in the placenta or are present in the blood retained there (Johnson and Haines 1952, de Courcy et al. 1952). That some adrenocortical-like steroid material is formed in the placenta is suggested by observations made on patients with Addison's disease who have become pregnant. The excretion of 17-ketosteroids in two women with this disease has been studied during three pregnancies by Samuels et al. (1943), Knowlton et al. (1949), and Jailer and Knowlton (1950). In all three instances the amount excreted increased and in the last trimester reached normal levels. In one patient the 17-ketosteroids were estimated by the Zimmerman reaction, and in the other by the same method during the first pregnancy and by the antimony-trichloride reaction in the second. During the later part of the second pregnancy increased amounts of neutral reducing lipids were found in the urine, and after delivery the excretion returned to abnormally low addisonian levels.

Further evidence about whether the material is formed in the maternal adrenal glands or the placenta was sought by taking samples of blood simultaneously at cæsarean section from an antecubital vein and a placental sinus. The results, shown in table II, are inconclusive because the steroid level was much the same in samples from both sites, and significantly the level in placental sinus blood was not higher than in the general circulation.

It seems probable that the main site of origin of the 17-hydroxycorticosteroid material in pregnancy is the maternal adrenal glands because the glands are hypertrophied and during the puerperium the steroid level falls gradually. The corticotrophic hormone responsible for this increased adrenal activity could come from either the maternal pituitary or the placenta, which is known to produce trophic hormones such as gonadotrophins, and there is some experimental evidence that a hormone with corticotrophic-like activity can be extracted from the placenta (Jailer and Knowlton 1950, Opsahl and Long 1951, Tarantino 1951, Cohen and Kleinberg 1952).

Increased formation of 17-hydroxycorticosteroids in pregnancy may explain why some patients with rheumatoid arthritis have a clinical remission at this time, and why diabetics may require increased amounts of insulin during pregnancy.

Summary

The plasma level of 17-hydroxycorticosteroids has been followed at about monthly intervals through the normal pregnancy of thirty women. At delivery samples of blood were taken from the umbilical cord, and thereafter from the mother at various intervals in the postpartum period.

The level of 17-hydroxycorticosteroids in the plasma rose progressively during pregnancy, becoming in some patients very high. After delivery the level fell, returning to normal after a week.

The nature and origin of the material formed during pregnancy are discussed.

We are grateful to Miss J. Pirkis for her constant conscientious technical assistance, and to the nurses of the antenatal clinic and obstetric wards for their coöperation. This work was supported in part by a Lund grant from the Diabetic Association.

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". . . It is a strange reflection that compels us to admit that while food, water and milk supplies are carefully supervised and protected in order to guard the alimentary tracts of members of the general public, state and local legislation has but little interest in the protection of the very delicate and sensitive membranes lining the respiratory tracts of the same general public."—W. S. WALTON, M.D., medical officer of health for Newcastle upon Tyne, in his report for 1953, p. 9.

TUBERCULOUS MENINGITIS TREATED WITH CORTISONE

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IN tuberculous meningitis exudate may cause vascular occlusions and fibrosis leading to cranial-nerve palsies, myelitis, hydrocephalus, and spinal block. Any manœuvre is welcome which lessens the incidence of these complications and shortens the stay in hospital.

Hitherto efforts to combat local obstruction produced by tuberculous exudate have been restricted to the introduction of purified protein derivative of tuberculin, heparin, streptokinase, and even trypsin into the cerebrospinal fluid (C.S.F.) after the obstruction has developed. Such measures have in the main been hazardous and disappointing in their results.

To prevent the formation of tuberculous exudate seemed more rational than to try and remove it after it had been formed. Because of its known property of discouraging local tissue reaction, we tried cortisone from the very beginning of treatment, adding it to our established routine of intramuscular and intrathecal streptomycin and oral isoniazid. Although alive to the theoretical dangers of giving cortisone to patients with tuberculosis we were further encouraged to take this step when we became aware of the fact that isoniazid, admittedly a highly effective antituberculous agent, seemed to cause tuberculous lesions to become initially more vascular and swollen (Ritchie et al. 1953, Dick 1954) than either *p*-aminosalicylic acid (P.A.S.) or streptomycin. This fact, though not of great importance in pulmonary or renal tuberculosis, could be responsible for precipitating hydrocephalus or spinal block in patients with tuberculous meningitis. The simultaneous administration of cortisone with the antibiotics might minimise these changes in the tuberculous lesions and thus prevent obstructions.

Material

This report concerns twelve patients, all adults with tuberculous meningitis, who were treated in the neurological unit of the Whittington Hospital. All were given intramuscular and intrathecal streptomycin together with oral isoniazid; half of them were also given cortisone from the beginning of treatment. Although not formally controlled, the group receiving cortisone is comparable with that treated conservatively. These numbers are too small, and the follow-up period is too short, for definite conclusions to be drawn, but the results are sufficiently encouraging to justify a preliminary publication.

Method

Our routine was to give intramuscular streptomycin 1 g. and oral isoniazid 400 mg. daily for six months, and intrathecal streptomycin 50 mg. daily for from three to five months. No single criterion, such as the C.S.F.-sugar level, is an adequate guide to when it is safe to stop the intrathecal streptomycin. We have taken the patient's general condition, shown by his weight, temperature, and erythrocyte-sedimentation rate (E.S.R.), together with the C.S.F. findings (rising level of sugar—preferably above 40 mg. per 100 ml.—and falling cell-count) into consideration. We stopped giving intrathecal streptomycin when all these factors had been favourable for a month. This routine was unnecessarily conservative (Shane and Riley 1953, Lorber 1954), but all twelve patients were judged by the same standards.

Results

Standard Treatment

The first six consecutive cases in this series were given the standard treatment. Two were classified as early cases (Medical Research Council 1948) and four as intermediate.

CASE 1 had a left hemiparesis on admission; her physical signs were unaltered when she was discharged.

CASE 2 developed bilateral optic atrophy, becoming blind only after she had clinically recovered from the meningitis.

CASE 3 developed spinal block and blindness, went steadily downhill, and died in three months. At necropsy a great deal of thick exudate was found round the spinal cord and the base of the brain. His infecting organism was fully sensitive to streptomycin, isoniazid, and P.A.S. in vitro. He was given some cortisone, but only after the development of his complications when he was moribund.

CASE 4 developed no neurological sequelæ; but during the course of her miliary and meningeal tuberculosis she had severe hypoplasia of her bone-marrow, with anæmia and leucopenia necessitating frequent blood-transfusions. Her spleen was enlarged and soft at this time. Under treatment her blood picture gradually became normal and her spleen impalpable, but some months after her discharge from hospital she developed hypersplenic pancytopenia; her bone-marrow was hyperplastic, her spleen enlarged and firm, and her peripheral blood poor in all the formed elements. Splenectomy was followed by complete remission.

CASE 5 developed a spinal block and required daily cisternal puncture for six months; during the third month she became deaf.

CASE 6 recovered uneventfully.

Standard Treatment plus Cortisone

The next six patients to be admitted were given cortisone from the outset in addition to the usual antibiotic therapy. Cortisone was given to them as follows: 300 mg. in divided doses on the first day, 200 mg. on the second, and 100 mg. on the third and every subsequent day until the intrathecal streptomycin was stopped. To prevent suprarenal exhaustion the cortisone was then "tailed off" and covered by a short course of corticotrophin for twelve days thus:

First three days cortisone 25 mg. and corticotrophin 10 units.
Second three days cortisone 12·5 mg. and corticotrophin 20 units.
Third three days corticotrophin 20 units but no cortisone.
Fourth three days corticotrophin 10 units but no cortisone.

All the patients on cortisone were given potassium chloride 3 g. daily by mouth. Serum-electrolytes were examined weekly.

Of this second group of six cases one was classified as early and five as intermediate.

CASE 7 had a left sixth-nerve palsy and extensor plantar responses on admission.

CASE 9 was stuporose and incontinent and had extensor plantar responses.

CASE 10 had cerebellar signs and extensor plantar responses, as did CASE 11 and CASE 12, both of whom were very disoriented. All these patients made rapid and uneventful recoveries, as did case 8.

CASE 8.—In addition to miliary tuberculosis and tuberculous meningitis this patient had several enlarged glands in his neck. These were thought to be tuberculous but were not considered to be a contra-indication to the use of cortisone. A month after the onset of treatment the glands broke down and had to be curetted. The patient felt remarkably well throughout this, and his meningitis cleared up without complication.

Discussion

As Brooks et al. (1954) observe, in tuberculous meningitis antibiotics have only a restricted effect if the circulation of the C.S.F. is interfered with as in spinal block. They conclude that an agent must be found which can rapidly disperse fibrin, and they say:

"It is also clear that early prophylactic use of such an agent would be more effective than its therapeutic use under conditions of established or incipient block."

Though there is no evidence that cortisone has any effect on fibrous tissue it is known to inhibit the formation of exudate. It therefore seems essential to give it as soon

as possible after tuberculous meningitis has been diagnosed. Not only is it necessary to prevent the mechanical obstruction caused by the exudate, but the associated endarteritis and neurological damage resulting from it are unlikely to be reversible except in their earliest stages.

Houghton (1954) has shown that prolonged courses of corticotrophin can be safely given to tuberculous patients while they are on full antibiotic treatment; his patients had pulmonary tuberculosis and were given corticotrophin for drug sensitivity. He observed that corticotrophin not only dealt with the allergic manifestations but also "revolutionised" the patient's morale. Jahn et al. (1954) describe the use of corticotrophin and cortisone with antibiotics in the management of overwhelming infections such as peritonitis, meningococcal meningitis, and lobar pneumonia.

Several reports have now been published abroad describing the use of cortisone or of corticotrophin in tuberculous meningitis. Shane and Riley (1953) reported eight cases treated with cortisone in addition to the usual antibiotics (five of these were not treated with intrathecal streptomycin). These workers thought the cortisone had a beneficial effect on the course of the meningitis. Bulkeley (1953) described the use of corticotrophin in thirty-one cases of tuberculous meningitis in children. Although it is not clear from the analysis that corticotrophin and not isoniazid was responsible for the improved mortality-rate in that series, at least it is evident that corticotrophin can be given to such patients without mishap. Wasz-Höckert (1954) has used cortisone and intrathecal hydrocortisone in the treatment of tuberculous meningitis in Helsinki; it is described as "routine" treatment in his unit now. de Lavergne et al. (1954) report its use in eighteen patients with tuberculous meningitis.

Our two groups of patients can conveniently be compared under three headings: the patient's general condition, the changes in the C.S.F., and the neurological complications. All the patients who were given cortisone showed a very striking and early clinical improvement. Whereas those treated conventionally (the first six patients) remained confused, uncoöperative, and miserable for a week or ten days after beginning treatment, those who were given cortisone at the start were fully oriented, alert, and cheerful within two or three days. The E.S.R. of the cortisone-treated patients fell noticeably sooner, though this may have been a non-specific effect of the hormone. Their appetites improved earlier than those of the controls, they gained weight more rapidly, and they clamoured to be allowed to get up within a week or two.

The C.S.F. findings differed in the two groups; in particular the cell-count fell very much more rapidly in the patients on cortisone than in the controls. This was not unexpected, since cortisone was given largely to prevent a severe cellular response in the meninges. At the same time, in some of the patients on cortisone the C.S.F.-sugar level rose to normal very early; this also may have been a non-specific effect of the hormone and might not necessarily indicate recession of the tuberculosis.

There was a striking difference between the two groups in the incidence of neurological complications. Of the controls one died and three have permanent stigmata, whereas all those treated with cortisone recovered completely without complications.

The prolonged administration of cortisone may be attended by retention of salt and depletion of potassium. Clinical evidence of this may be anticipated by the weekly estimation of serum-electrolytes. All patients treated with cortisone should be given additional potassium chloride by mouth. The catastrophe of suprarenal failure may be avoided by covering the withdrawal of cortisone by a short course of corticotrophin. The danger of lighting up an old infection, such as osteomyelitis, is real, and careful inquiry should be made into the patient's previous illnesses. Every precaution must be taken to protect a patient on cortisone from acquiring a secondary infection, since he may be unable to localise it adequately, and septicæmia may result.

The danger of disseminating tuberculosis throughout the body may be advanced as a contra-indication to cortisone therapy in tuberculous meningitis. However, many patients with this disease also have miliary tuberculosis; in them the process could hardly be more disseminated. Indeed, with effective antibiotics cortisone therapy may accelerate recovery by rendering the tubercle bacillus more accessible; it is less likely to become walled off inside caseous material surrounded by a fibrous wall and with a poor blood-supply. In any patient with tuberculosis or any other infection treated with cortisone the appropriate antibiotics must be continued after withdrawal of the hormone.

Although it is not strictly relevant to the issue of treating tuberculous meningitis with cortisone, we feel that mention must be made of the present trend of withholding intrathecal streptomycin from selected cases. Some cases of tuberculous meningitis can doubtless be "cured" without intrathecal streptomycin, provided that they are treated with full doses of oral isoniazid and intramuscular streptomycin. Early cases are those in which there is the greatest incentive for withholding intrathecal therapy. It is not by any means established that this is safe in all cases, however, and most centres treating tuberculous meningitis are giving intrathecal streptomycin for at least four to six weeks. Whichever course is adopted, we believe that there is enough evidence to show that the addition of cortisone to the treatment of tuberculous meningitis has important advantages and merits further trial in a larger controlled series.

Summary

In this report six consecutive cases of tuberculous meningitis treated by routine methods are compared with the next six patients admitted with this disease, who were treated in the same way except that cortisone was added.

Neurological complications occurred in four of the six control patients, and one of these died. The patients treated with cortisone all recovered completely, without any neurological complications, and their clinical improvement was much more rapid than that of the controls.*

No complications of cortisone therapy were observed.

Cortisone must be given from the beginning of treatment and with full antibiotic cover, which should continue for several weeks after the cortisone has been withdrawn.

A more extensive clinical trial should be undertaken into the value of cortisone in the treatment of tuberculous meningitis.

We wish to thank the workers at the Whittington Group Laboratory for their coöperation, Dr. Arnold Bloom for his advice about two of our patients, and Miss E. M. Marshall for help with the foreign references.

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* Since the preparation of this report the last case (12) of the series has developed spinal block and impairment of vision although he is otherwise well. Only much greater experience of the late complications could show whether cortisone reduces their incidence or could avert them if continued for a longer period.

SKIN REACTIONS BENEATH ADHESIVE PLASTERS

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ALTHOUGH medical and surgical plasters have been used for many years, comparatively few clinical investigations have been undertaken into the skin reactions developing beneath them.

Peck et al. (1948) described three types of reaction produced by adhesive tape: (1) a fleeting reaction, affecting mostly hairy areas, due to the mechanical trauma of removing the tape; (2) a specific sensitivity to one or more ingredients of the plaster; and (3) a reaction due to change in pH and to the growth of bacteria on the skin beneath the plaster.

Humphries (1947) has shown that moulds and bacteria grow beneath ordinary adhesive plasters. By adding zinc salts of propionic acid and of caprylic acid to ordinary plaster he found that of 130 patients who reacted to the original plaster only 5 reacted to the enhanced one. Increased tackiness was also noted after the plaster had been in position for seven days; this might be due either to the added fatty acids or to the decrease of maceration consequent on the reduction of bacterial flora beneath the plaster. Gaul and Underwood (1949) were unable to substantiate the observation that the incorporation of bactericidal substances in the adhesive mass tended to decrease the incidence of adhesive-tape dermatitis.

Peck et al. (1948) found that the pH of normal skin was 5·2; the pH increased to 6·3 after seven days and to 6·7 after fourteen days beneath ordinary plaster, but only to 5·7 after seven days and to 6·4 after fourteen days beneath plaster to which fatty acids had been added. The bacterial flora decreased beneath both plasters, but especially beneath the one containing fatty acids.

We consider that at least five types of reaction may develop beneath adhesive plasters, owing to the following causes:

(1) Trauma of removal.
(2) Irritation by the adhesive.
(3) Retention of sweat and serous discharges on the skin, leading to maceration of the horny layer.
(4) Favourable or unfavourable disturbance of the bacterial flora by selective antibacterial action of some constituent of the spread.
(5) Eczematous sensitisation to some substance in the adhesive spread or in the rubber.

Trauma of Removal

The traumatic reaction of removal occurs mostly at pilosebaceous orifices and is manifested as follicular papules with some diffuse or blotchy erythema. It is greatest with very tacky plasters and becomes milder if the plaster has remained in situ for more than five days. The reaction develops a minute or two after removal of the plaster, particularly at hairy sites and if a plaster solvent has not been used to assist removal. It has to be differentiated from the reaction of irritation, which develops only after a plaster has been in situ for some three to five days and is then seen immediately the plaster is removed. Although Glick et al. (1948) have recommended propylene glycol ethyl ether as a non-toxic and non-inflammable remover of adhesive plaster, we have found that ether is entirely satisfactory for this purpose, provided the danger of its inflammability is appreciated.

Irritation from Adhesive

Irritation effects show as red papules and pustules, sometimes with moist pink areas but without vesiculation. The reaction is due to mechanical stimulation of the formation of keratin by the adhesiveness of the spread or by some chemical constituent of the adhesive mass. There is also interference with desquamation. The sweat-ducts are obstructed at their orifices along the epidermal ridges, and there is a milder hyperkeratosis and plugging of the ostia of the pilosebaceous follicles. This reaction is more pronounced in sweaty people and in hot humid surroundings. It appears clinically five days or more after the plaster has been applied, but Peck et al. (1951) observed histological changes within three days of the application of a plaster. Any pre-existing acne at the site of application of the plaster may be aggravated within forty-eight hours, giving a papular or papulopustular reaction (fig. 1D)

Rubin (1949) showed that hyperkeratosis could be produced by slight continuous mechanical irritation —e.g., from the small range of movement of adhesive tape over the skin. Another factor may well be the keratoplastic properties of certain chemicals, particularly coal-tar derivatives. Thus chlorinated phenols are known to stimulate the formation of keratin, and in this category is chloroxylenol, which is contained in liquor chloroxylenolis *B.P.* (roxenol) and in 'Dettol,' 'Germosan,' 'Neo-monsol,' 'Osyl,' 'Streph,' 'Zant,' and several other proprietary antiseptics. This substance has, in the past, been incorporated in plasters by some manufacturers.

Infection often develops in the ducts and follicles beneath the ostial obstructions, either mild when it is due to *Staphylococcus saprophyticus* and other saprophytes, or frankly purulent when it is due to *Staph. pyogenes*, *Pseudomonas pyocyanea*, or *Proteus vulgaris*. The process is analogous to that of miliaria rubra ("prickly heat").

We have tried to discover if there is any quantitative relationship between the adhesiveness of a plaster and its irritating effects on the skin. For this purpose plaster discs of three known degrees of adhesiveness were applied to the backs of 31 students in random fashion, over the scapular regions, and the number of papules beneath each disc was counted after it had been in position for a week. If part of a patch became detached, the fraction of adhering remainder was estimated, and the papule count was adjusted to what it would have been if the whole patch had remained in contact with the skin. The results are summarised as follows:

Adhesiveness (G per sq. inch)	*Average no. of papules per 9·6 sq. cm.*
705 ± 55	14·7
445 ± 40	12·3
200 ± 80	11·1

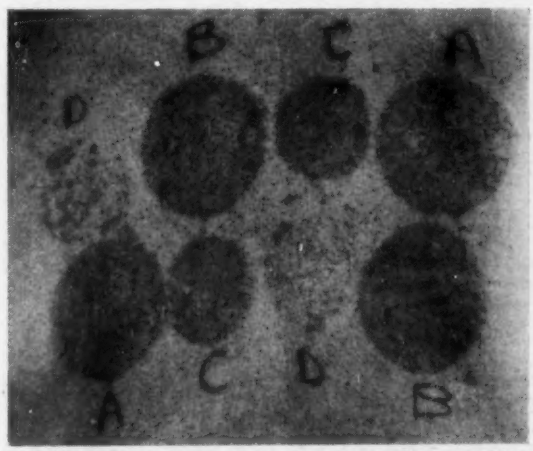

Fig. 1—Patch-tests made with: A, standard plaster; B, plaster without chloroxylenol; C, standard plaster; D, plaster made with deproteinised rubber. Note positive eczematous response to A, B, and C, and effect of irritation alone of D, probably due to coincident acne vulgaris.

The figures (which are not recorded here) have been considered statistically by Mr. E. C. Fieller, who has expressed the view that they show quite conclusively the liability of the number of papules to increase with the adhesive strength of the plaster. This does not exclude the probability that plasters of equal adhesive strength may vary in their tendencies to irritate by virtue of other differences in their physicochemical properties, and we hope to study this problem further when suitable plasters of equal adhesiveness but of different composition can be provided.

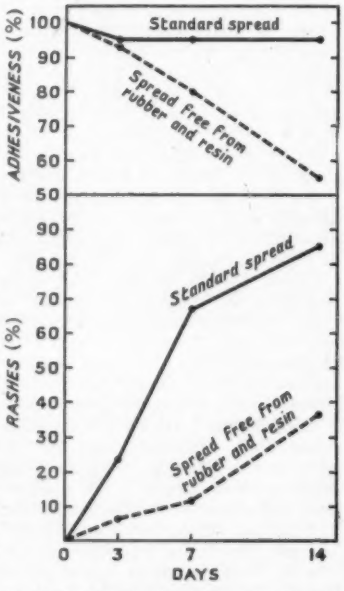

Fig. 1—Incidence of rashes according to adhesiveness of plaster.

Fig. 2 compares the incidence of rashes when very adhesive plasters and less adhesive plasters are applied. The plasters used were: (1) a porous plaster of standard spread, and (2) a porous plaster said to contain neither rubber nor resin. It will be observed that there were far fewer rashes from the latter plaster (37%) than from the former (85%), but its adhesion at the end of fourteen days was only 55% against 95% with the standard spread. We have already indicated that the reaction of irritation depends inter alia on adhesiveness. The plaster with only 55% adhesion is effective as a bandage wound round a limb but relatively ineffective for small patch dressings, and it should be called "semi-adhesive" to differentiate it from "fully" (or 95%) adhesive plasters.

We found that waterproof and ordinary plasters of approximately similar adhesiveness produced much the same number of papules, suggesting that the operative factor is the physicochemical properties of the plaster constituents and not the degree of permeability of the backing material.

One patient (case 25 in table) gave strongly positive reactions to the plaster mass, all constituents, benzene, and distilled water. He had dermographia, and weals developed at all sites. It was considered that this was an example, not of contact eczematous dermatitis, but of dermographia caused by the trauma of removing the patches.

Retention of Sweat and Discharges

Retention of sweat and serous discharges may lead to maceration of the horny layer, infection, or infective eczema. Peck et al. (1951) found that a propionate-caprylate fatty-acid solution applied to the skin before the application of plasters diminished the incidence of erythema, œdema, and oozing but not the number of papular reactions. At the same time, the bacterial flora was noted to be progressively reduced according to the number of applications of the fatty-acid solution. We have made patch-tests on 35 students with porous and non-porous adhesive plasters, with and without 0·6% zinc propionate and 0·6% zinc caprylate incorporated. Plasters with fatty acid added produced a slightly reduced incidence of rashes (with the porous plasters but not with the non-porous ones) (fig. 3). The incidence of rashes was slightly less with porous than with non-porous adhesive spreads up to seven days but not subsequently. A waterproof plaster produced the highest incidence of rashes after a week, but the difference between the curves was so slight as perhaps to be insignificant. "Porous" bandages are only partially porous; they leave uncovered only a small proportion of the sweat-ducts and sebaceous follicles. They have the same degree of impermeability between perforations as have similar non-porous bandages all over their surface. In certain circumstances the perforations may become obstructed after a few days by detritus or discharge. Nevertheless Scheffler and Lindner (1952), in a study of 100 patients, found that porous plasters were tolerated the best. E. M. Bavin (personal communication) has found that the permeability of non-porous plasters to water vapour is 100 G per sq. metre per twenty-four hours, and of porous plasters 3500 G per sq. metre per twenty-

REACTIONS

Reactions to	Case no. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Plasters	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+*	+	+	−	+
Roxenol	−	−	+	+	+	−	−	−	−	−	±	−	−	+	−	−	−	−	+	−	−	−	+	+	−
Fully adhesive plasters	5/5	5/5	5/5	5/5	5/5	5/5	5/5	2/2	5/5	2/2	1/1	1/1	1/1	1/1	2/2	5/5	5/5	1/2	1/1	1/1	0/1	1/1	1/1	1/1	0/2
Components in arachis oil:																									
Arachis oil	−	−	−	−	−	−	−	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Flectol-H	−	−	−	−	−	−	−	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chloroxylenol	−	−	−	−	−	−	−	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Crêpe rubber	−	−	−	−	−	−	−	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Smoked rubber	−	−	−	−	−	−	−	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colophony	−	−	−	−	−	−	+	−	−	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Components in benzene:																									
Benzene	..	..	..	−	−	−	−	..	−	−	−	−	−	−	−	−	−	−	−	±†	−	‡	..	..	+§
Flectol-H	..	..	..	−	−	−	−	..	−	−	−	−	−	−	−	−	−	−	−	+	−	?	..	..	+
Chloroxylenol	..	..	..	+	+	−	−	..	−	+	−	−	−	+	−	−	−	±	−	+	−	?	..	..	+
Crêpe rubber	..	..	..	−	−	−	−	..	−	−	−	−	−	−	−	−	−	+	−	−	±	?	..	..	+
Smoked rubber	..	..	..	−	−	−	−	..	−	±	+	−	−	−	−	−	−	+	±	±	−	?	..	..	+
Colophony	..	..	..	−	−	+	+	..	+	+	−	−	−	−	−	+	−	−	−	+	−	?	..	..	+
Mixed components	..	..	..	..	..	+	+	..	−	−	..	..	−	..	..	..	..	..	..	..	..	..	..	..	+
Elimination tests:																									
Plaster without chloroxylenol	..	..	..	..	..	..	..	+	+	+	+	+	+	+	..	..	..	..	+	+	..	+	−	−	+
Plaster without rubber proteins	..	..	..	..	..	..	..	−	+	+	−	−	−	+	±	..	..	±	±	±	..	−	+	+	+
Conclusions:																									
Sensitivity	U	U	U	P	P	C	C	R	C	P+C	R	R	RC	P?M	?RC	C	U	R?P	?R	IU	I?R	R	P	P	ID

*, after 5 days. †, read at 5 days. ‡, patches fell off. §, dermographia. C, colophony. I, irritation effects. ID, irritation and dermographia. M, multiple. P, chloroxylenol. R, rubber. RC, rubber-protein complex in plaster mass. U, undetermined.

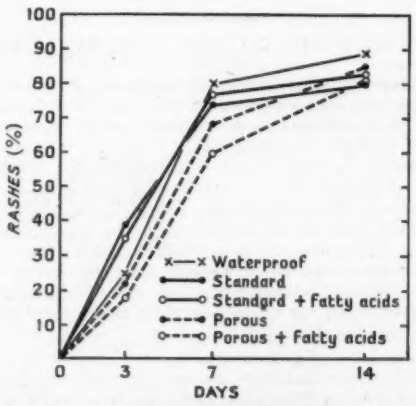

Fig. 3—Incidence of rashes according to composition of plaster.

four hours. The permeability is estimated by measuring the gain in weight of a 'Polythene' canister, filled with calcium chloride, which has a lid with a circular hole 3/4 in. in diameter covered with the adhesive tape being tested. The canister is kept under standard conditions of 40°C temperature and 90° relative humidity and is weighed at regular intervals.

Disturbance of Bacterial Flora

The bacterial flora may be disturbed when manufacturers incorporate an antiseptic—e.g., chloroxylenol—in the adhesive spread. Chloroxylenol is a potent bactericide against *Streptococcus hæmolyticus* but much less active against *Staph. pyogenes* and almost inactive against *Ps. pyocyanea* and *Proteus vulgaris* (*Extra Pharmacopœia* 1952). This disparity of action against different organisms may predispose to staphylococcal, proteus, or pyocyanea infection ("ecological" drug eruption), or to the production of a bacterial eczema, perhaps with secondary widespread "autolytic" eczema.

Eczematous Sensitisation

Contact eczematous reactions to some chemical constituent of the adhesive spread or of the rubber are much rarer than reactions caused by irritation. They develop after a latent period of days on the first exposure, or after a few hours with subsequent exposures, and are characterised by erythema, œdema, and vesiculation. The constituents of plasters which are most likely to be responsible include colophony resin (rosin), crêpe rubber, smoked rubber, rubber antioxidants, plasticisers, and antiseptics which some makers have thought it wise to incorporate. Of the other constituents wool-fat (lanolin) is known to be a very occasional sensitiser, in 1·14% of eczematous people but much less than this in the general population (Sulzberger et al. 1953). Liquid paraffin and zinc oxide are unlikely to upset the skin.

In trying to find the commoner causes of contact-eczematous reactions from adhesive plaster we applied the individual constituents, dissolved in arachis oil, on small squares of gauze held in place by an adhesive of low irritative and sensitisation potential to people known to be sensitive to the plaster mass. Negative results were obtained in 9 of 10 cases, the exception being a positive reaction to colophony. Further trials were then made with the constituents dissolved in benzene, and positive results were obtained in most of the patients tested.

The substances were made up into solutions containing in 0·1 ml. the amount of each constituent present in 1 sq. cm. of the composite plaster. The results were observed at forty-eight hours and once more at four to seven days. The substances tested were as follows:

(1) Benzene (control).
(2) 0·1% 'Flectol-H,' a plasticiser and antioxidant.
(3) 0·25% chloroxylenol.
(4) 5% crêpe rubber containing no antioxidant.
(5) 5% smoked rubber containing very little antioxidant, probably of hydroquinone type, and some oxidation products of the smoking process.
(6) 5% colophony resin, the chief constituent of which is abietic acid, said by Schwartz et al. (1947) to be an irritant to hypersensitive people.

The results were as follows:

Number of patients tested to constituents in benzene	19
Positive to 5·0% colophony	4
Positive to 0·25% chloroxylenol	3
Positive (?) to 5·0% crêpe rubber	1
Positive to 5·0% smoked rubber (2 ? positive)	3
Positive to 0·1% flectol-H	0
Positive to benzene	0
Positive to colophony and to chloroxylenol	1
Positive to crêpe rubber, to smoked rubber, and ? to chloroxylenol	1
Positive to multiple factors (probably irritant effect)	1
Positive to every patch (due to dermographia)	1
Negative to all constituents	3
Invalid (patches fell off after a few hours)	1

Trials have been made with deproteinised rubber plasters and with chloroxylenol-free plasters on suitable patients. People sensitive to chloroxylenol tolerate a plaster free from this substance, and people sensitive to either crêpe or sheet rubber are tolerant of adhesive dressings made with deproteinised rubber (fig. 1). On the other hand, people sensitised to colophony have continued to react to plasters free from chloroxylenol or from protein fractions of rubber. The results were as follows:

Positive to plaster with chloroxylenol and negative to plaster without chloroxylenol	2
Positive to plaster with rubber proteins and negative to plaster without rubber proteins	5
Positive to plaster with rubber proteins and doubtful to plaster without rubber proteins	4
Positive to plasters with and without chloroxylenol and with and without rubber proteins	3

(Rubber is deproteinised by a complex process of ammoniation and centrifugation which throws out the proteins, salts, and possibly the natural antioxidants. Treatment with trypsin hydrolyses any remaining protein, after which further centrifugation is done, followed by coagulation with acetic acid.)

From these tests the following conclusions were drawn:

Sensitive to chloroxylenol	6 (? 7)
Sensitive to colophony	5
Sensitive to rubber	5 (? 7)
Sensitive to rubber-adhesive complex	1 (? 2)
Multiple sensitivity	(? 1)
Irritation effects	2
Irritation effects through dermographia	1
Undetermined causes (of which 3 were tested to ingredients in arachis oil, and 1 was tested to ingredients in benzene; in the 5th the effects were probably due to irritation).	5

For the detailed results see the accompanying table.

The foregoing clinical results are supported by the results of experiments on animals made in the laboratories of Smith & Nephew Research Ltd. by Mr. E. M. Bavin, B.SC., and Miss B. James, B.SC., to whom we are indebted for the following summary of their work:

"Our technique is to apply the substance by inunction to a clipped, but not depilated, area of the back of the guinea-pig, using 0·1 ml. of a solution of the constituent in arachis oil. This dose is repeated daily for twenty-eight days. The guineapigs are then left for a further fourteen days, at the end of which pontamine sky-blue, dissolved in physiological saline solution, is injected intravenously, and two minutes later a further dose of the constituent is applied to the skin. After an hour the guineapigs are killed, and the skin at the site of application is reflected from the back. A definite blue patch is considered as a positive reaction, but a very slight blue coloration is neglected because it can be caused by excessive handling of the skin. This technique was adapted from the work of Miles and Miles (1952) and Halpern (1953).

In control experiments with foreign serum or chemical substances—e.g., nitrosodimethylaniline and dinitrochlorobenzene—which are known to produce sensitisation we obtained strong reactions by this technique. The results

of our work with adhesive plaster constituents are given in the following table:

Constituent	*Positive reactions*
Colophony	2/10 guineapigs
Flectol-H	0/5 ,,
Chloroxylenol	4/10 ,,
Pale crêpe rubber	1/10 ,,
Arachis-oil solvent	0/10 ,,

From these results it will be seen that chloroxylenol is the most active sensitising agent, and that colophony resin and pale crêpe rubber produced a low degree of sensitisation."

In modern dermatological practice in Great Britain chloroxylenol, in the form of roxenol, is one of the commonest causes of contact eczematous dermatitis. In some of the patients sensitised to chloroxylenol a history was obtained of a reaction to adhesive plaster followed by a reaction to roxenol used as an antiseptic, or vice versa, and patch-testing confirmed that it was the chloroxylenol fraction of the adhesive mass that caused the reaction. We have even used plasters known to contain chloroxylenol as readily available patches for confirming sensitisation to roxenol.

A patient presented with a history of a cut palm which had been treated with a well-known proprietary brand of roxenol, after which a rash developed around the wound. This had been treated with a roxenol ointment, and the dermatitis spread locally. The patient wore cotton gloves as dressings which were immersed in roxenol by his wife before he used them. Subsequently the rash developed all over both hands which became reddened, swollen, and desquamating in glove distribution, with a sharply demarcated upper limit. This patient also used roxenol as a shaving lotion in spite of the fact that it stung him when applied. Patch-tests with adhesive plaster containing chloroxylenol and another free from this substance gave positive and negative reactions respectively. Subsequent avoidance of chloroxylenol brought about a steady improvement in the dermatitis.

We have not yet had the opportunity to test patients with plasters modified only by the substitution of some other resin for colophony; but we have not observed any contact-eczematous reaction to a plaster said to contain neither resin nor rubber.

We believe that contact eczematous reactions due to plasters could be avoided, or rendered still rarer than they are, by using deproteinised rubber, by abandoning the practice of incorporating antiseptics with sensitising properties, and by substituting for colophony either a natural or a synthetic resin of lower sensitising potential.

Comments

The following difficulties may be met when interpreting results:

(1) Reactions of removal and of irritation must be differentiated by inspection of the patch immediately after its removal.

(2) Negative reactions with constituents and positive ones with the plaster mass may be due to some chemical interaction between constituents in the composite plaster or to the use of an unsuitable suspending agent for the ingredients under test. Peck et al. (1951) do not state whether the many ingredients with which they made patch-tests on patients known to be sensitive to plasters were applied alone or in suspension; possibly the use of an unsuitable suspending agent may have led to their completely negative results.

(3) In applying the constituents it is necessary to use an adhesive with a small sensitising potential. For this purpose we have used the above-mentioned plaster containing neither rubber nor resin but of relatively poor adhesive quality; on one occasion it was not even sufficiently adhesive to retain the patches in position for forty-eight hours. Negative patch-tests have been obtained with this plaster in all cases of sensitivity to other plasters.

(4) When multiple patch-tests are made with plasters, if the cause is not soon determined there comes a time when the patient may begin to react in a non-specific fashion to most or all of the patch-test substances. In these circumstances patch-testing should be suspended for several weeks or even months.

Summary

There are at least five types of reaction to adhesive plasters.

Papulopustular reactions of irritation are more numerous as the adhesiveness of the plaster is increased. Other physicochemical properties of the plaster mass are also probably important.

Reactions of eczematous sensitisation are most commonly due to colophony, rubber proteins, antiseptics, or complexes in the plaster mass. Reactions to the plasticiser or to the antioxidant have not so far been observed. We have not tested our patients for sensitivity to lanolin.

These reactions are rendered rarer by using deproteinised rubber, abandoning the use of chloroxylenol, and substituting for colophony some other resin of lower sensitising potential.

It is a pleasure to acknowledge the help afforded by Smith & Nephew Research Ltd., who supplied much of our information about substances commonly used in the manufacture of adhesive plaster and provided some of the materials used in this investigation. We also wish to thank Mr. E. C. Fieller for his statistical advice. The photograph was taken by Mr. P. Broadbery at The London Hospital. We also thank the many anonymous students who volunteered for patch-testing.

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MASKED EPILEPSY

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IN 1950 the Bristol Medico-Chirurgical Society considered at a clinical meeting a boy, aged 8½ years, who had recurrent attacks of pain in a leg. Epilepsy was diagnosed and confirmed by electro-encephalography. Later the boy began to have overt major epileptic attacks. Treatment with phenobarbitone stopped the fits and the attacks of pain.

On seeing this case I first became aware that epilepsy may consist of sensory manifestations only. During the past three years, while engaged in consulting pædiatric practice, I have seen several cases in which epilepsy assumed unusual forms, and I suspect that this is probably more common than is generally realised.

The term "masked epilepsy" is now used to denote psychic seizures, psychomotor disorders, or merely temporary changes in personality causing fits of aggressiveness. In the past it was used in a broader sense, as by Sir Frederic Still (see below). Such variants seem to be common enough to justify resurrection of the term to denote cases in which symptoms such as pains in the body or head, vomiting, or even pyrexia are the only manifestations of epilepsy.

It has long been recognised that epilepsy may show itself in various ways without convulsions or unconsciousness. Trousseau (1868) reported the case of a boy, aged 10 years, who had attacks several times a day in which he complained of pressure in the pit of the stomach, vomiting, giddiness, and pallor. Trousseau diagnosed epilepsy but could convince no-one of this until a year

later, when the boy had several attacks of undoubted grand mal.

Sir Frederic Still (1912) wrote:

"In addition to these categories of major and minor epilepsy, there is another which often passes unrecognised for a time, the so-called 'épilepsie larvée,' or 'masked epilepsy.' I have seen several cases in which the chief symptom was a sudden pain in the navel or epigastrium, e.g.:—William B., aged 10½, since the age of 9 months has had sudden attacks of pain in the epigastrium; this lasts a few seconds, during which there is sudden pallor, succeeded by flushing, after which the boy becomes pale and asks to lie down and goes to sleep for a long time. This occurs several times a day. With large doses of bromide these attacks were greatly reduced in number and sometimes checked altogether for several weeks."

Kinnier Wilson (1940) was aware of the occurrence of such attacks, but gave his opinion somewhat cautiously:

"Some of these alleged visceral equivalents might be epileptic and not migrainous, others comparable to a tabetic crisis, still others based on unrecognised lesions."

Moore (1944, 1945, 1950), in America, has reported several cases which presented with abdominal pain. He says:

"Most of the patients suffering from this disorder have in the past been hospitalised numerous times, subjected to scores of examinations and varied forms of therapy without relief, and have had needless laparotomies done. Only too frequently they have been considered as psychoneurotics or malingerers."

Livingston (1951) claims that Moore first described the syndrome of abdominal epilepsy. This is not so. Trousseau did that seventy-five years earlier.

Davidson and Lombroso (1952) described cases of epilepsy in children characterised by paroxysmal disturbances of temperature regulation producing both hyperthermia and hypothermia.

Mulder et al. (1954) reported 100 patients who had paroxysmal visceral symptoms either as the aura of an epileptic attack or taking the place of an attack. They state:

"The bizarre nature of the complaints frequently led to a diagnosis of localised visceral disease. . . . Correct diagnosis depends on the recognition of the paroxysmal occurrence of the symptoms and their inappropriateness to the total situation, together with the association of other symptoms and findings of cerebral involvement."

They also quote Hughlings Jackson (1888), who wrote:

"The great thing as to the diagnosis of epilepsy is not the quantity of the symptoms, nor the severity of the fits, but the paroxysmalness."

In this country, if the diagnosis is ever considered at all, masked epilepsy is classed as extremely rare. Conway (1951) could find only 1 case among 250 children, aged more than 2 years, who attended as outpatients at The Hospital for Sick Children, Great Ormond Street, London, with abdominal pain as the main complaint. The six most common diagnoses were as follows:

Diagnosis	*No. of cases*
Colic of unknown cause	75
Mesenteric adenitis	52
Constipation	28
Periodic syndrome	24
Psychogenic	23
Enteritis	23

Perhaps the colics of unknown causation, periodic syndromes, and psychogenic cases concealed a few sufferers from masked epilepsy.

Case-reports

SO-CALLED CYCLICAL VOMITING

Case 1.—A boy, aged 8 years, came to my notice when his sister was brought into hospital with status epilepticus. From the age of 2½ years he had had recurrent attacks of severe vomiting. Sometimes during these he became unaware of his surroundings for as long as thirty minutes, and occasionally the right side of his face twitched. His mother was alive and well. His father had occasional bilious attacks. His sister was aged 6 years and had had two attacks of vomiting and unconsciousness on previous occasions. The boy had been seen once by a consultant, who wrote: "From the family and personal history I guess this is a form of cyclical vomiting which may well lead on to migraine later in life." When his sister came into hospital, it was found that she had epilepsy, and it was decided to investigate the boy also.

On examination he showed no abnormal signs in the central nervous system. His blood-pressure and urine were normal. The Wassermann reaction was negative, and radiography of the skull showed no abnormality. An electro-encephalogram showed "a highly abnormal record indicative of epilepsy; there were no focal or localised abnormalities."

Treatment with phenobarbitone has controlled the attacks, and when he is given gr. 1½ daily he has no trouble.

Comment.—The history of unconsciousness and twitching of the face should have stimulated further investigation, which would have led to the correct diagnosis earlier. The epilepsy can scarcely be called masked but merely unrecognised.

Case 2.—A girl suffered from frequent bilious attacks from the age of 8 years. Her father had had similar attacks in childhood. She had several attacks of acute tonsillitis, and in January, 1949, her tonsils were removed. In March, 1949, she developed acute nephritis and was admitted to hospital. The disease ran a mild course, and she was discharged, after seven weeks, apparently cured. The registrar's summary of her stay stated: "She has been inclined to get attacks of vomiting associated with pyrexia up to 102°F for which we have been unable to find any very satisfactory cause." At home she continued to have bouts of pyrexia and vomiting. Sometimes these were accompanied by right-sided headache, and twice she had what were termed black-outs. Her family doctor sent her to a consultant as a case of cyclical vomiting. No abnormal physical signs were found apart from carious teeth, and no firm diagnosis was made. Later the attacks were accompanied by severe lower abdominal pain and diarrhœa. The family doctor then referred her, at the age of 12 years, for a further opinion. He thought that the attacks did not fit in with cyclical vomiting but were psychological in origin, though he admitted that he could detect no cause of mental conflict. Further questioning of her mother revealed that during the attacks she usually became unresponsive, sometimes unconscious, and occasionally incontinent of urine. The family doctor had given her phenobarbitone gr. ¼ daily for six months, and during that time she was free from attacks. For some reason he stopped it, and the attacks returned.

Investigation showed no abnormality in the central nervous system, blood-pressure, urine, radiograph of skull, or Wassermann reaction. An electro-encephalogram showed "an abnormal record indicative of epilepsy; there were no focal abnormalities, nor was there any lateralisation."

Treatment.—She was treated with phenobarbitone and had one attack of vomiting in two years. A second electro-encephalogram, taken eighteen months after the first, showed "some epileptiform features, but there is considerable improvement since the previous record; the patient would appear to be well controlled by anticonvulsant drugs."

Comment.—The epilepsy was masked at first and caused attacks of pyrexia and vomiting. Later the clues of unconsciousness, incontinence, and improvement under treatment with phenobarbitone led to a diagnosis of epilepsy, even before the electro-encephalogram was taken. It seems that pyrexia may be one of the manifestations of epilepsy. It might be argued that the pyrexia caused the epilepsy; but no explanation was found for the pyrexia, though by chance it was observed in hospital while she was suffering from another disease. In fact the pyrexia took the place of convulsions.

HEADACHES

Case 3.—A boy, aged 4 years, with no relevant family history, was sent into hospital because of attacks of headache, sleepiness, and vomiting which had begun at the age of 1 year and had recently become more frequent. At first there were intervals of 4–6 months between the attacks, but just before his admission he had three attacks in fourteen days. The

onset was with headache; after about thirty minutes he went to sleep; at intervals he woke up and vomited, then went back to sleep. He became pale, yet his skin was hot and perspiring. There was no correlation with the time of day, meals, or exercise.

Examination and investigation revealed no abnormality. His blood-sugar level three hours after a meal was 108 mg. per 100 ml. An electro-encephalogram showed a record "just outside normal limits with mild epileptiform features, but it is not indicative of this condition; there were no focal abnormalities."

Treatment.—Since it was felt that the attacks were probably epileptic, he was treated with phenobarbitone, and after three months he was much improved. His mother stated that he had had no attacks at all and that he was "a different child." She also said that he used to grunt and nod his head when asleep but did so no longer.

Follow-up.—Another electro-encephalogram, taken three months after the first, showed "a record which remains outside normal limits and is now definitely suggestive of epilepsy."

Case 4.—A girl had, at the age of 5 years, a febrile illness which was not diagnosed. For three months after this she complained of headaches at intervals of about a week. During the attacks she lost her appetite, became pale, and felt sick, but did not vomit. She had had two convulsions in infancy which were ascribed to teething and were ignored. Her brother, aged 17 months, had already had one convulsion. Her mother had had shock therapy for schizophrenia, and a first cousin on her mother's side had epilepsy.

Examination and investigation revealed no abnormality except possibly that some increase in intracranial tension was visible in the radiograph of the skull. There was no papilloedema. An electro-encephalogram showed: "an abnormal record indicative of epilepsy; there were no focal or localised abnormalities."

Treatment.—The girl was treated with phenobarbitone. After three months her mother reported that the headaches were less frequent, and after another three months they had disappeared. The mother then volunteered the statement: "She is not the same child. She is not noisy and mischievous any more. She used to get panic-stricken but doesn't now."

Comment on cases 3 and 4.—Note the alteration in behaviour observed by the parents when these two children were treated adequately. The idea of an epileptic personality as a precursor to epilepsy has been discarded, but these two cases suggest that there may be such an entity. It is possible that personality changes may be the only manifestation of epilepsy.

Case 5.—A boy, aged 9 years, had three years' history of headaches. They occurred every day and lasted from one to twelve hours. He went pale but had no nausea or vomiting. Neither aspirin nor codeine tablets relieved him. At the age of 2 years he weighed only 21 lb. and was referred to a consultant, who found no abnormal physical signs and made no investigations or diagnosis. His mother had had fits up to the age of 7 years.

Examination revealed a small boy weighing 44 lb., but no other abnormalities except a positive tuberculin test and a doubtfully opaque left antrum on radiography. An ear, nose, and throat surgeon considered this last finding of no importance. The Kahn test was negative. The boy was sent home from hospital with no definite diagnosis.

Later history.—He continued to have headaches, though not so often as before. A year later he began to vomit, and epilepsy was considered. Electro-encephalography showed: "an abnormal record definitely suggestive of epilepsy; although there was some localisation to the parieto-temporal lobes, with a left-sided preponderance, the degree of asymmetry was not great."

Treatment.—He was treated with phenobarbitone. His headaches became fewer but, when they did occur, more severe. An attempt was made to use primidone, but this was abandoned because of the side-effects. The use of sodium phenytoin in addition to phenobarbitone has proved successful.

ABDOMINAL PAIN

Case 6.—A boy, aged 8 years, whose mother suffered from migraine, had sick headaches for two years and then had one which was accompanied by abdominal pain. He was seen by a surgeon, who stated that there was no appendicitis. Later on he was investigated in the pædiatric outpatient department, and no abnormality was found in any system. Migraine was tentatively diagnosed. It was suggested that either codeine or ergotamine might be tried. During the next eighteen months he had repeated attacks of vomiting and abdominal pain. There was no relief from codeine. Ergotamine was not tried. He was an only child, and his family doctor felt that his troubles might be magnified by his mother. He sent him to another surgeon for advice about the appendix. This surgeon too refused to operate, and the boy was referred to the medical side again.

Investigation revealed no abnormality, but it was considered that the abdominal pain might be an epileptic equivalent. An electro-encephalogram showed: "a definitely abnormal record indicative of epilepsy; there were no focal abnormalities."

Treatment.—The boy was treated with phenobarbitone and during six months has had no attacks.

Comment.—But for the vigilance of two surgeons the boy would probably have had a normal appendix removed. This case shows the importance of full investigation even in cases where there is every reason to suspect that psychological difficulties are concerned.

Case 7.—A girl, aged 5 years, was referred by the school doctor for attacks of abdominal pain which was severe enough at times for her to be sent home from school. She had had them since the age of $2^1/_2$ years. They came on about three or four times a week, making her scream. She felt sick but never vomited. One of her mother's brothers had had similar symptoms in childhood, and at the age of 20 began to have epileptic fits, which continued at intervals for thirty years.

Investigation revealed no abnormality apart from large tonsils. The report on the electro-encephalogram was: "This is an abnormal record definitely suggestive of epilepsy. There were no focal abnormalities."

Treatment.—The girl was treated with phenobarbitone and has remained remarkably free from pain. After a month's treatment her mother said: "She has not complained of anything for four weeks, which is quite unusual for her."

Discussion

Diagnosis

It seems fair to say that the main symptoms in idiopathic epilepsy may be headaches, or vomiting, or pains, or pyrexia, or a combination of any of these. They do not represent an aura but take the place of the convulsion and unconsciousness as epileptic manifestations. If a child has any of these symptoms at short intervals or for a long period and they cannot be explained an electro-encephalogram should be taken. Points in the history which suggest epilepsy are a family tendency to convulsions, pallor during the attacks, drowsiness after them, and improvement when treated with anticonvulsants; but it is not necessary for these to be present before pressing on with the investigation. There is, of course, no excuse for neglecting to make a thorough investigation to exclude other causes of the symptoms. In some cases pyrexia acts as a trigger for an attack of epilepsy, and the cause of the pyrexia must be sought. In all cases the possibility that a cerebral tumour may cause the symptoms must be borne in mind and excluded before idiopathic epilepsy is diagnosed.

Patients are sometimes seen in whom a firm diagnosis of grand mal or petit mal is made but no abnormality is ever recorded in their electro-encephalographic tracings. Presumably the same may happen in masked epilepsy. The diagnosis is then very difficult; but it may be made if there is a strong family history and the response to treatment is satisfactory.

Family History

Of the 7 children reported here 4 had a history of convulsions in near relations. In addition a parent of 1 of them had had recurrent vomiting in childhood, and a parent of another child had migraine. In only 1 case could no relevant family history be obtained. In cases 1, 2, 6, and 7 there was a story of similar attacks, which might have been masked epilepsy, in near relations.

Age of Onset

The age of onset varied from 1 to 8 years, which is consistent with the usual onset of idiopathic epilepsy. "Three months' colic," investigated by Illingworth (1954), seems to be a baffling disease, and it might be worth considering whether it is sometimes due to epilepsy. Illingworth cites Still and Sheldon as stating that it sometimes leads to convulsions. No cases of "three months' colic" have been met with in this investigation.

Treatment

In this series phenobarbitone has generally proved successful in relieving symptoms. In America either diphenyl hydantoin sodium or a combination of drugs is usually recommended. Blumberg (1954) describes a case where troxidone proved necessary. This patient who had become a problem child, was, when his abdominal epilepsy was controlled, converted into "a joy and a model child."

It seems best to try first the least toxic drug available —i.e., phenobarbitone—and to give it in adequate doses. Epileptic children seem able to tolerate large amounts of phenobarbitone without becoming sleepy, whereas normal children cannot.

Incidence

These 7 cases were met with in three years' consultant pædiatric practice, during which about 1400 new patients were seen either as outpatients or on admission to hospital. The figures are of little value, however, because in the early months cases must have been missed and classed as psychogenic or inexplicable, whereas later, when general practitioners had realised my interest in such cases, they might refer more than would normally come into the net. A few more cases have been seen recently but have not been followed up long enough to merit inclusion here.

Cyclical Vomiting

It is doubtful if this disease exists. No genuine cases have been seen in this area in the past three years. Investigation may reveal one of the following causes: abortus fever, cerebral tumour, islet-cell tumour of the pancreas, recurrent neutropenia, recurrent pyelitis, sinusitis, or tuberculous mesenteric adenitis.

In the first description of cyclical vomiting (Gee 1882), 9 cases were reported of "fitful or recurrent vomiting." The notes nowadays would be judged inadequate, but some of the patients may well have been epileptic. Of the 5 for whom a family history was given 4 had near relations who had paroxysmal headaches or "megrim."

Hamilton (1951) has pointed out that one or other of the parents is not infrequently a victim of migraine. Smith (1951) gave his experiences with 700 public-school boys: 198 of them had had attacks of vomiting before entry at the age of 13, and 13 of these developed migraine. Smith stated:

> "The most dramatic migrainous sequel is epilepsy. One boy who had habitual and often violent sick headaches suddenly had a severe epileptic fit in the school library. He was treated with sedatives and had no further attacks."

The only other boy who "crossed the frontier from migraine to epilepsy" continued to have attacks, because his father, a well-known surgeon (who had had similar attacks until the age of 17), was against phenobarbitone.

These two (or three, if we include the father) might well be called cases of masked epilepsy.

Migraine

The relation between migraine and epilepsy has been described often enough, and the electro-encephalogram in migraine has been studied. It is usually stated that the tracing is abnormal but not typical of epilepsy. The main difficulty has been in diagnosing migraine accurately. The cases and families described above seem to indicate that two conditions cause paroxysmal headaches: true migraine and masked epilepsy. To the unsuspecting observer masked epilepsy will often seem to be migraine, and no doubt in the past many cases have been so labelled.

This surmise is supported by the following statement made by Critchley (1950):

> "Prevention of attacks of migraine by medicinal means is often most disappointing. . . . Perhaps phenobarbitone is the safest bet. . . . Little if any benefit results from the administration of this drug at the time of an attack. The patient should persevere for two or three months before concluding that the drug is without avail."

Night Terrors

It is well recognised that these are sometimes epileptic manifestations (Paterson 1944). In giving the history of patients with epilepsy parents often make some such statement as "He sleeps badly," "He is on the go all the time in his sleep," and "He jerks and twists about in bed." In some cases there is a history of this unrest at night in brothers or sisters who show no other indication of epilepsy. Treatment with phenobarbitone usually controls it.

Electro-encephalography

It is usually conceded that a normal tracing can be obtained from an undoubted epileptic, and that a normal person may at times show an abnormal tracing, though with modern techniques this is becoming rarer. Critics may complain that this makes it easy to invent a syndrome and to call it masked epilepsy. The proof of the pudding is in the eating. The considerable improvement which took place in these patients when they were treated with phenobarbitone confirms the epileptic nature of their illness. Moreover none of them fitted any other diagnosis.

Of the 7 cases 6 had no localising features, but in case 5 the parietotemporal lobes seemed to be involved. It is doubtful if localisation is of any value in this condition, though Mulder et al. (1954) suggest that it may be.

Nocturnal Enuresis

It has been suggested that nocturnal enuresis may in some patients be the only symptom of epilepsy. Turton and Spear (1953) found an abnormally high percentage of epileptic tracings in a survey of 100 children who had severe enuresis. Treatment with phenobarbitone rarely benefits such patients, and the question may be considered to be still unsettled.

Psychological Causes

Fielding (1749) wrote:

> "Every physician almost hath his favourite disease, to which he ascribes all the victories obtained over human nature. The gout, the rheumatism, the stone, the gravel, and the consumption, have all their several patrons in the faculty: and none more than the nervous fever, or the fever on the spirits."

The fashion has not altered, and nowadays abdominal pain is often put down to psychological causes. Certainly pain in children sometimes has a psychological cause or reason for continuing, but this is not common. It is very easy to call pain psychological whenever we do not understand its nature (cf. Moore 1944, 1945, 1950). The state of a child who has a genuine pain which his parents and doctor cannot explain is sad indeed, and after the passage of time he may well become neurotic. Let us therefore seek ever more earnestly for causes and see if we cannot whittle down the core of "abdominal pain of unknown origin."

Telling the Parents

People still have fear and horror of the word "epilepsy." Fits, convulsions, and seizures may be allowed, but epilepsy not. It is difficult to explain masked epilepsy to some parents, and occasionally they will aggressively resist it. Either we can attempt to educate parents into a realisation that epilepsy is not a slur nor inevitably associated with mental deficiency, or we can glide over

the problem by using such terms as "abdominal migraine."

Summary

Cases are described in which epilepsy manifested itself as pain in the leg, so-called cyclical vomiting, headaches, pyrexia, and abdominal pain.

This type of epilepsy is fairly common though often unrecognised, and many cases of cyclical vomiting and migraine may prove to be epileptic.

The term "masked epilepsy" should be extended to include these phenomena.

Treatment with phenobarbitone is usually successful.

I wish to thank Dr. H. Lovell Hoffman for advice, and Dr. E. C. Turton for his reports on the electro-encephalograms.

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SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

WITH MEGALOBLASTIC ANÆMIA DUE TO SPONTANEOUS ILEOCOLIC FISTULA

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THIS is the first recorded example of subacute combined degeneration of the spinal cord with macrocytic anæmia and spontaneous ileocolic fistula. Initially liver therapy cured the anæmia and arrested the neurological degeneration, and this position has been maintained without further liver injections after successful resection of the fistula. The 3 published cases of anæmia and subacute combined degeneration of the spinal cord due to intestinal fistula all followed gangrenous appendicitis and all were fatal. In the present case the discovery of the fistula after a barium meal rather than an opaque enema is unusual. Free hydrochloric acid was present in the gastric juice, and there was an increased amount of fat in the stools. Diarrhœa was not a prominent symptom. The clinical picture was complicated by a duodenal ulcer.

Case-report

A woman, aged 25, whose mother had died of pernicious anæmia, was first seen in 1941 complaining of nausea and vomiting shortly after meals. During the next two years she lost 2 st. in weight, and in 1943 an active duodenal ulcer was found radiographically, associated with normal acid secretion. In April, 1945, the patient complained of breathlessness, difficulty in walking, and a feeling of uselessness in the legs, hands, and arms. Her diet since 1943 had consisted mainly of eggs and milk.

On examination she was pale and thin, with bruising over the lower back and knee-joints. There was moderate pitting œdema of the ankles. The liver was palpable one finger-breadth below the costal margin. The knee-jerks and ankle-jerks were absent, and the plantar responses were extensor. There was considerable disturbance of joint and position sense in both lower and upper limbs, and vibration sense was absent in the legs up to the level of the iliac crests. Romberg's sign was positive. No other abnormality was found.

Fig. 1—Film three-quarters of an hour after barium meal, showing communication between small bowel and middle of transverse colon, and diverticula in small bowel.

Investigations.—Examination of the blood showed red cells 1,150,000 per c.mm., with anisocytosis, megalocytosis, and polychromasia; Hb 32% (4·9 g. per 100 ml.); white cells 2000 per c.mm.; Arneth shift to the right. A van den Bergh test gave a positive direct response. Sternal puncture showed megaloblastic hyperplasia. Fæcal fat on a normal diet was 76% and 28% of the dry weight of two random specimens. Blood-ascorbic acid 0·14 mg. (normal 0·75 mg.) per 100 ml. Serum-iron 26·8 μg. (normal 98–112 μg.) per 100 ml. Plasma-proteins 5·3 g. per 100 ml., albumin/globulin ratio 1·1/1. A test-meal showed that free hydrochloric acid was present.

Treatment and Progress.—The patient was treated with crude liver extract parenterally and had a reticulocyte response of 34%, the Hb increasing to 60% in a month; by November, 1945, the blood picture was normal. At this time a further barium-meal and follow-through radiological examination was made which showed, in addition to the chronic duodenal ulcer, an ileocolic fistula and several diverticula scattered through the small intestine (fig. 1). A contrast enema showed a doubtful irregularity in the middle of the transverse colon. Treated with liver the patient remained well except for occasional attacks of mild diarrhœa lasting two or three weeks every two or three months. Medical treatment improved the abnormal neurological signs but did not entirely abolish them, with the result that by August, 1948, the plantar responses were less briskly extensor, and sensory disturbance was limited to loss of vibration sense below the knees. Repeat barium studies in November, 1950, confirmed the presence of the fistula. At that time the patient weighed 114 lb., her Hb was 94% (14 g. per 100 ml.) with normal red-cell morphology, and the plasma-protein level was 6·5 g. per 100 ml., with albumin/globulin ratio 1·4/1. The colloidal gold reaction of the serum was negative. The total fæcal fat in a twenty-four-hour specimen was 46·5% of the dried fæces (on a normal diet).

Operation.—The fistula was excised by Mr. J. C. Angell, F.R.C.S., on Jan. 22, 1951, and the peritoneal cavity was found to be obliterated by fine avascular adhesions. Directly below the incision a fistula was found from the middle of the transverse colon to a loop of small bowel which could not be identified. The fistula was excised and the normal continuity of the bowel restored.

Postoperative recovery was uneventful, and the patient was discharged ten days after the operation, liver treatment being discontinued.

Follow-up.—The patient was seen again on March 12, 1951, when she reported that she was very well and had gained a little weight. Her red cells were 5,600,000 per c.mm., with normal morphology, Hb was 94% (14 g. per 100 ml.), and

leucocytes were 5500 per c.mm. The neurological signs were unchanged. On March 15, 1954, her weight had increased to 146 lb., and she was in full-time employment. She had no nausea or vomiting, and her bowels were regular, with no diarrhœa. Her plantar responses were equivocal, and her only sensory abnormality was some diminution in vibration sense over the lower legs. Her Hb was 84% (12·4 g. per 100 ml.), and the red-cell morphology was normal.

Discussion

The presence of free acid in the gastric juice excludes the diagnosis of pernicious anæmia. Askey (1944) carefully reviewed 47 reported cases of pernicious anæmia with free acid and found none proved. The association of macrocytic anæmia with lesions of the bowel has been recognised for more than fifty years, cases being reported by White (1890), Wallis and Warfinge (1893), and Meulengracht (1929); but Faber (1895) seems to have been the first to suggest a causal relationship (Plum and Warburg 1939). The first recorded instance of macrocytic anæmia following intestinal anastomosis appears to be that of Little et al. (1929). The subject of macrocytic anæmia with intestinal stricture and anastomosis is well reviewed by Barker and Hummel (1939), who add 2 new cases and give details of 49 previously reported examples. Cameron et al. (1949) found 9 more patients in the published reports of the next decade and added 1 of their own. Wilkinson (1949) states that all cases of intestinal macrocytic anæmia would respond to liver if the marrow were megaloblastic, and this was the experience in the present case.

The combination of bowel lesion, macrocytic anæmia, and involvement of the spinal cord is much less common. Davis and Brown (1952) say of megaloblastic anæmias resulting from structural abnormalities affecting the small intestine: "Neurological complications are extremely rare, but a few cases have been recorded." Watson and Witts (1952) state that subacute combined degeneration of the cord occurs "in a fairly large proportion of patients" but give no details. However, in an earlier analysis of published cases Cameron et al. (1949) found "neurological signs" in 12 of 61 cases. This total includes 2 patients with subacute combined degeneration:

The first of these (Little et al. 1929) was in a man, aged 29, who had two entero-anastomoses for intestinal obstruction following gangrenous appendicitis and who also had fæcal fistulæ. A macrocytic anæmia with normal gastric analysis developed. The anastomoses were undone, and the diarrhœa ceased, but further treatment of the macrocytic anæmia with liver was necessary. On two occasions withdrawal of treatment was followed by relapse, and on the second of these the patient developed "combined system disease" and died; necropsy showed obstruction from adhesions.

The second, a patient of Hurst (1933), was a woman, aged 30, with symptoms of intestinal obstruction following appendicectomy. She was treated by ileocolic anastomosis, and five years later she developed severe macrocytic anæmia with free acid in the gastric juice and signs of further obstruction. She had bilateral extensor plantar responses and diminished knee-jerks and ankle-jerks, with pins-and-needles in feet and hands. She died three weeks after operation for relief of the obstruction. There is no mention of a necropsy.

Woltman and Heck (1937), reviewing degeneration of the spinal cord in conditions other than pernicious anæmia, gave details of a woman, aged 60, who developed multiple intestinal fistulæ and a fæcal fistula after appendicectomy. Later the hæmatological and neurological picture of pernicious anæmia developed, and typical subacute combined degeneration of the cord was verified at necropsy. There is no mention of any gastric analysis; therefore the concurrent development of true addisonian anæmia cannot be entirely excluded.

Of 8 patients with short-circuits and intestinal loops 6 were deficient in vitamin B_{12} and hence potential candidates for degeneration of the spinal cord (D. L. Mollin, personal communication). Thomson (1953) describes a man, aged 20, with ileocolic anastomosis following appendicitis, and macrocytic anæmia but no neurological involvement. The anæmia was cured with vitamin B_{12}, and, later, operation to restore normal bowel continuity made further treatment with vitamin B_{12} unnecessary. In an analysis of the "intestinal-loop syndrome" Jackson and Linder (1951) conclude that involvement of the upper end of the small gut tends to produce predominantly steatorrhœa, and of the lower end predominantly anæmia. From the present review it seems that neurological complications, when they occur, are also commonest with lesions of the lower part of the small intestine.

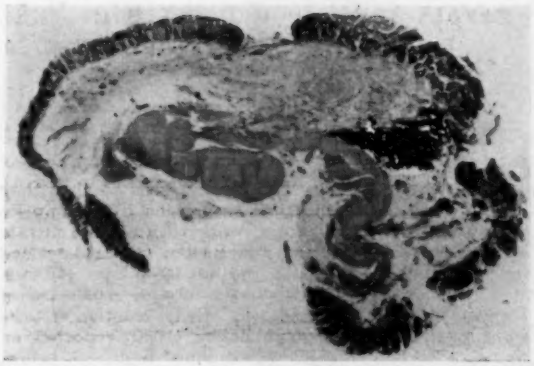

Fig. 2—Section through fistula, showing absence of Crohn's disease and of tuberculosis (× 8).

The ætiology of the fistula in the present case remains obscure. Taylor (1930) found at necropsy of a woman, aged 54, with macrocytic anæmia and multiple intestinal diverticula the peritoneal cavity almost obliterated by adhesions as in the present case, presumably due to past inflammation. Perforation of one of the small-bowel diverticula into the colon seems the most likely cause of the fistula in the present case. There was no histological evidence of Crohn's disease or of tuberculosis (fig. 2).

Summary

A case of subacute combined degeneration of the spinal cord with macrocytic anæmia following the development of an ileocolic fistula of unknown cause is reported.

The fistula was demonstrated by a barium meal but not by an opaque enema.

The anæmia and the spinal-cord disease were arrested by treatment with liver extract. Resection of the fistula completed the cure, doing away with the need for further liver injections.

Three years after operation the patient is well and has a normal blood-count.

I wish to thank Dr. H. S. Kellett for the hæmatological findings, Dr. R. J. C. Campbell for the radiograph, and Dr. R. E. Steiner for advice and encouragement.

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PAPAIN-TREATED RED CELLS IN THE DETECTION OF INCOMPLETE ANTIBODIES

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PROTEOLYTIC enzymes modify red cells so that they can be agglutinated in saline suspension by incomplete rhesus antibodies. Following work with cholera filtrate by Pickles (1946), Morton and Pickles (1947) described the use of trypsin for the purpose and later (Morton and Pickles 1951) described the use of a filtrate of *Streptomyces albus* extract and briefly mentioned tests using papain. Kuhns and Bailey (1950) reported on papain more fully. The technique described below, modified from that of Kuhns and Bailey, has proved both reliable and delicate. Stratton (1953) introduced a slide technique using papain-treated red cells. The method he recommended was used in parallel with the tube technique in the examination of 110 sera.

The use of papain-treated cells obviates certain objections to other methods of detecting antibody: prozone effects, the formation of rouleaux in protein and other colloidal media, the expense of commercial bovine albumin, and the time and skill needed to produce the anti-human-globulin serum of Coombs et al. (1945).

Reagents

Stock Papain.—1 g. of papain is suspended in 100 ml. of 0·85% sodium chloride. It may be stored for several months at +4°C. Eleven brands of papain were tested. All appeared reliable, but those of Biddle, Sawyer * and of Mawson † appeared the most active for the purpose.

Preparation of Papain Solution.—As an alternative to the papain suspension described above a more elegant preparation in the form of a solution may be obtained as follows. Stock papain suspension is stored at +4°C for twenty-four hours care being taken to agitate it at intervals. It is then centrifuged, and the supernatant fluid is retained for use in exactly the same way as the suspension. The solution is slightly less active than the suspension but has proved wholly reliable.

Storage of Stock Papain for Long Periods.—Whereas stock papain in current use keeps best at +4°C, thus eliminating the need for constant freezing and thawing, the stock reagent will keep for long periods at −20°C. It has been found useful to store at −20°C the bulk stock papain, be it suspension or solution. A small quantity at a time is thawed out and kept at +4°C for routine use.

Stock Buffered Saline Solution.—1 volume of 1/15 molar Sorenson phosphate buffer, pH 7·3, prepared by adding 3 parts $M/15$ Na_2HPO_4 to 1 part $M/15$ KH_2PO_4, is added to 9 volumes of 0·85% sodium-chloride solution.

Red Cells for Treatment.—Red cells, both group-O rhesus-positive (CDe/cDE, R_1R_2) and group-O rhesus-negative (cde/cde,rr) are washed three times in 0·85% sodium-chloride solution. After the last washing they are packed.

Method

Nine volumes of stock buffered saline solution are added to one volume of stock papain. To one volume of the thrice-washed packed rhesus-positive cells and to one volume of the thrice washed packed rhesus-negative cells are added in each case two volumes of the buffered saline-papain mixture. The cell suspensions so prepared are incubated for thirty minutes at 37°C in a water-bath. The cells are next washed three times and made up to a 5% concentration in 0·85% saline solution. Before use they are warmed to 37°C.

0·1 ml. of the serum to be tested is pipetted into each of two "precipitin" tubes (7 × 50 mm.) and warmed to 37°C in the water-bath. This eliminates the non-specific agglutination shown by many sera of enzyme-treated red cells at +20°C or less. 0·1 ml. of the enzyme-treated rhesus-positive cell suspension is added to one of the two precipitin tubes, and a similar quantity of the rhesus-negative cells to the other. After an hour's incubation at 37°C the two tubes are read macroscopically and checked microscopically for the presence of agglutination, care being taken not to let the red cells cool during the process. Microscope slides warmed to 37°C may be used to lessen the degree of false positive results due to cold agglutinins.

Results

61 sera containing rhesus antibody were examined. On no occasion was macroscopical agglutination absent. In each case a papain-treated red-cell titration was done, and parallel titrations were done with red cells suspended in saline solution and in 20% bovine albumin, and by the anti-globulin technique of Coombs et al. (1945) and the trypsin and *Strep. albus* techniques of Morton and Pickles (1951).

110 maternal sera were examined by Stratton's technique in parallel with the papain method described above and with the other methods mentioned. 5 specimens gave a false positive result by Stratton's method, all other methods used in parallel being negative. The technique, when antibody titrations were compared, seemed to be as sensitive as the tube papain technique described in this paper.

The tube technique with papain-treated red cells proved as sensitive as any other method, giving very few false positive results. The table gives examples of results obtained with four typical anti-Rh sera.

EXAMPLES OF TITRATION OF FOUR RHESUS ANTISERA

—	Rhesus antiserum			
	1	2	3	4
Saline solution	0	0	1	0
20% bovine albumin	2	8	2	8
Anti-globulin test (Coombs et al. 1945)	2	8	8	32
Trypsin technique (Morton and Pickles 1951)	4	32	16	64
Strep. albus technique (Morton and Pickles 1951)	4	64	16	64
Papain technique (tube method)	8	512	16	128
Papain technique (Stratton 1953)	8	256	16	128

In 3370 maternal sera examined papain gave only 11 false positive results and no false negatives. It is believed that most false positive results develop as a result of cooling of the cell-serum mixture. Of the false positives only one was detected on repeating the test again with the same reagents. During tests with papain-treated red cells in other blood-group systems enhancement of agglutination was noted with Anti-A, Anti-B, Anti-M, Anti-N, Anti-Le^a, and Anti-Le^b. No agglutination took place with Anti-Fy^a.

Discussion

The method described has certain advantages over other antibody techniques in routine use. The formation of rouleaux, common in protein media, is obviated. Papain is much more economical than the relatively expensive commercial bovine albumin. Moreover the considerable time and skill required for the production of anti-human globulin used in the Coombs technique is avoided. Papain appears more sensitive than either trypsin or *Strep. albus*. The method described is simpler than that of Kuhns and Bailey (1950), for they recommend continual agitation of the cell suspension during the time that it is being treated with the enzyme, and suggest centrifuging the tubes containing cell-serum mixture before finally reading the results. Both these requirements have been eliminated.

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† Mawson, c/o John Bell & Croyden, 50, Wigmore Street, London, W.1.

In Stratton's method it is necessary to prepare an activator fresh on the day of use. This was also found unnecessary; moreover the error due to false positives was rather higher than in the tube method

Summary

A method is described for the preparation and use of papain-treated red cells to detect incomplete rhesus antibody.

Results of testing 3370 maternal sera are considered as well as the titration of 61 rhesus antibodies. Mention is made of reactions with papain-treated red cells in other blood-group systems.

The papain technique appears very reliable and more sensitive than any other for routine use in the detection of incomplete rhesus antibodies.

Thanks are due to Prof. R. J. V. Pulvertaft, Dr. A. E. Mourant, and Dr. J. G. Humble for very helpful advice and criticism, and to Dr. Mourant for the various antisera.

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PRIMARY PEPTIC ULCERATION OF THE JEJUNUM

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WHEREAS ulceration of the jejunum as a sequel to gastro-enterostomy is so common as to bring that operation for the treatment of duodenal ulcer with hyperchlorhydria into universal disfavour, primary jejunal ulceration is distinctly uncommon.

The first description of primary jejunal ulceration was attributed by Ebeling (1933) to Sestier (1827). Richardson (1922) reviewed 12 published cases and added 1 of his own; Ravdin (1927) brought the tally up to 23; and Ebeling (1933) reviewed 47 cases. Berry and Dailey (1940) brought to light other published cases which had been missed; and these, their own case, other cases subsequently published (Robinson and Wise 1940, Dowdle 1942, Chambers 1943, Carmichael and Doggett 1946, Evert et al. 1948), and the present case bring the total number of published cases to 83.

Primary jejunal ulcers behave in every respect like peptic ulcers of the lesser curvature of the stomach or the first part of the duodenum inasmuch as they may cause symptoms of dyspepsia and may bleed, perforate, or stenose. Both the practical considerations of natural history and management, and the theoretical consideration of ætiology of primary jejunal ulceration are well illustrated in the ensuing case.

Case-report

A married woman, aged 23, first began to complain of ulcer pain in 1951. She had previously been healthy if rather delicate. The only relevant past history was of amenorrhœa associated with an infantile uterus and attributed to ovarian insufficiency. In January, 1951, she complained of epigastric pain and heartburn coming on two or three hours after a meal and relieved by food and alkalis. In February, 1951, when she presented herself as a blood-donor, she was rejected on the score of anæmia.

Early in 1952 she became weak and noticeably more pale, and her attention was drawn for the first time to the passage of tarry stools. Her dyspeptic symptoms had meanwhile subsided, but in February, 1952, she had an attack of severe upper abdominal pain lasting three days. Her hæmoglobin was only 5 g. per 100 ml., and she was given blood-transfusions. Barium-meal radiography at that time is said to have indicated a "possible" ulcer in the second part of the duodenum (fig. 1), but a further radiograph taken two weeks later did not confirm this finding. During the ensuing three months she continued to have intermittent upper abdominal pain.

Fig. 1—Barium-meal radiograph in January, 1952, showing apparent ulcer crater in second part of duodenum. This crater was not seen in barium-meal radiograph two weeks later.

First Admission and Laparotomy.—In May, 1952, she was admitted to the Royal Perth Hospital after a very severe attack of melæna. She was a thin frail girl of considerable intelligence but displaying a child-like dependence on her dominating mother. Physical examination was unrevealing. The abdomen was lax and not tender. A fractional test-meal showed an exceptionally high level of acid secretion, free HCl rising to 100 clinical units at the end of the first hour without histamine stimulation. Barium-meal radiography (fig. 2) showed some distension of the duodenum and jejunum, the significance of which was unapparent. The proximal jejunum did not show active peristalsis.

Laparotomy confirmed the duodenal dilatation, but no bowel lesion was detected, and no active surgical measures were undertaken.

Second Admission.—In September, 1952, further upper abdominal pain was followed by a severe hæmatemesis. No abnormality of the stomach was disclosed at gastroscopy.

Third Admission.—Early in 1953 the patient complained again of epigastric pain occurring two hours after meals and radiating into the back. The pain was not now relieved by food or by alkalis. After another attack of melæna she was readmitted and given blood-transfusions. Barium-meal radiography and gastroscopy were unrevealing, and a cholecystogram was normal. Overnight gastric secretion, followed by a histamine test-meal in the morning, was studied. The results are shown in figs. 3 and 4. Total nocturnal secretion of gastric juice and HCl production exceeded even the mean values obtained by Levin et al. (1952) in male patients with duodenal ulcers. Before this admission the patient had also complained of loose motions, passing two or three bulky pale offensive stools daily. The suspicion of steatorrhœa was not confirmed, for on a daily intake of 160 g. of fat 90% was absorbed.

Fig. 2—Barium-meal radiograph in May, 1952, showing considerable dilatation of second and third part of duodenum.

Fourth Admission and Second Laparotomy.—Further pain

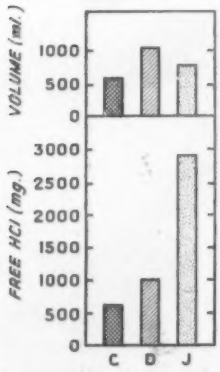

Fig. 3—Volume of, and amount of free HCl in, gastric juice secreted from 9 p.m. to 9 a.m. by controls (C), male patients with duodenal ulcer (D) (Levin et al. 1952), and patient with primary jejunal ulcer (J).

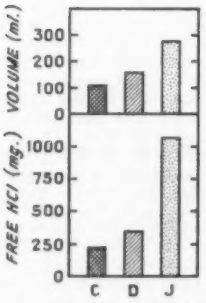

Fig. 4—Volume of, and amount of free HCl in, gastric juice secreted in 1 hr. after histamine stimulation in controls (C), male patients with duodenal ulcer (D) (Levin et al. 1952), and patient with primary jejunal ulcer (J).

and hæmatemesis occurred in October, 1953. Gastroscopic appearances of the stomach were again normal. Several hours after gastroscopy the patient complained of acute generalised abdominal pain. Examination showed distension and abdominal rigidity. The radiological demonstration of gas under the diaphragm confirmed the diagnosis of perforation of the bowel.

At laparotomy (Mr. Hector Stewart) a perforation of the jejunum on its antimesenteric border about 10 cm. distal to the duodenojejunal flexure was found. The edges felt indurated, suggesting perforation at the site of the ulcer. What was thought to be another ulcer was palpated about 6 cm. proximal to the site of perforation. The stomach was normal. The duodenum was greatly dilated. The ulcer was oversewn, and the abdomen was closed without drainage.

Fifth Admission and Third Laparotomy.—In December, 1953, the patient was readmitted for elective resection of the proximal jejunum (Mr. Stewart). The duodenojejunal flexure was mobilised and about 40 cm. of the ulcer-bearing proximal jejunum was resected with end-to-end duodenojejunal anastomosis. With a more distal loop of jejunum a classical Polya subtotal gastrectomy was then done (fig. 5A and B). The postoperative course was uncomplicated.

Sixth Admission and Fourth and Fifth Laparotomies.—In January, 1954, two days after discharge, the patient returned complaining of severe upper abdominal pain. She was febrile, with a white-cell count of 17,000 per c.mm. An indefinable mass was felt in the left upper abdominal quadrant, and an intraperitoneal collection of pus was diagnosed. Before exploration could be contemplated two further hæmatemeses occurred. At gastroscopy the stoma was well visualised, but no ulcer was seen. The volume of aspirated fasting gastric juice was 70 ml., containing 24 units of free HCl.

At exploration it was seen that perforation of another ulcer, about 1·5 cm. in diameter and situated 2 cm. distal to the stoma of the gastrojejunostomy, in the efferent loop, had led to the formation of a large abscess walled off by coils of small intestine and omentum. To oversew this ulcer was technically impossible; the most that could be done was to plug it with omentum. The gastrojejunostomy was unpicked and the jejunum repaired. The remainder of the stomach was excised, and a loop of jejunum well distal to the ulcer was anastomosed to the œsophagus, with side-to-side jejunojejunostomy (fig. 5c).

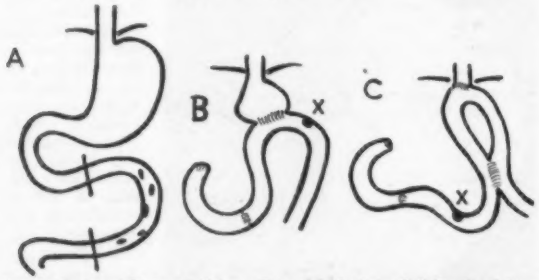

Fig. 5—A, sites of jejunal ulcers; B, anatomical result following jejunectomy with duodenojejunostomy and subtotal gastrectomy; C, final anatomical result (total gastrectomy); X, site of postoperative ulceration and perforation.

The postoperative course was stormy, with paralytic ileus and bilateral pleural effusion as complications. After two weeks a mounting temperature and white-cell count, with a palpable mass in the left loin, indicated a further collection of pus. Exploration revealed a large left-sided retroperitoneal abscess, which was drained. The patient made an uninterrupted recovery.

Pathology.—The specimen obtained at the time of subtotal gastrectomy consisted of 40 cm. of proximal jejunum, including its mesentery, which contained several enlarged lymph-nodes. The lumen of the jejunum was narrowed to the diameter of a lead pencil opposite the site of the ulcer, which had previously been oversewn. Six ulcers, varying in diameter from 0·5 to 1·5 cm., scattered haphazardly round the circumference of the bowel, were present in the proximal 20 cm. of the jejunum. Both macroscopically and microscopically (fig. 6) the ulcers had the appearances of peptic ulcers of other sites. The surrounding jejunal mucosa was normal. Heterotopic gastric mucosa was not present in serial sections. Chronic inflammation alone was seen in the mesenteric lymph-nodes.

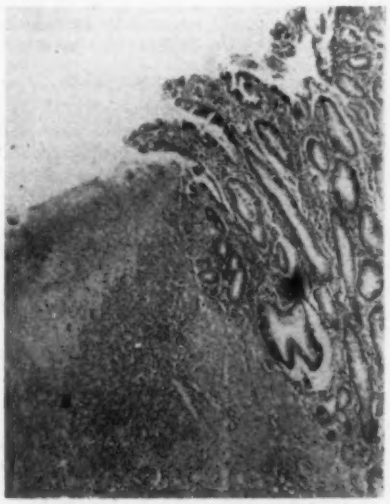

Fig. 6—Section of edge of one of six ulcers in resected portion of proximal jejunum. Part of sloughing fibrinous base is in left-hand portion of field.

Discussion

At the time of Ebeling's (1933) review the mortality-rate from primary jejunal ulceration with perforation was 68·5%. Notwithstanding subsequent improvements in surgical and related techniques the patient is indeed fortunate in having survived so many hazardous complications.

The distribution by age and sex of primary jejunal ulceration is strikingly similar to that of duodenal ulcer. Among those affected the ratio of males to females is 3·5 to 1, and symptoms and complications usually occur in the fourth, fifth, and sixth decades of life. The range of age-distribution, however, is great, a child aged 8 years being the youngest patient recorded (Kirmisson 1898) and a man aged 77 the oldest (Velter 1924). So far as can be ascertained, our patient is the youngest female on record.

The repeated inability to demonstrate a lesion either radiologically or gastroscopically to explain the obvious symptoms of peptic ulceration was a source of perplexity for two years. In retrospect, the constantly seen dilatation of the duodenum and the absence of peristalsis of the jejunum in barium studies was of diagnostic significance. Even if ulcers in the jejunum are not radiologically demonstrable, it seems that a diagnosis can be tentatively made, before dangerous complications develop, on the

basis of a history of ulcer pain and the radiological demonstration of abnormalities of muscular tone in the duodenum and jejunum. A study of radiological findings in previously reported cases supports this view.

The nearer the ulcers lie to the duodenojejunal flexure, the closer do the symptoms simulate those of duodenal ulcer. The periodicity of pain, its relation to meals, and the relief obtained from acid-neutralising agents were all characteristic of duodenal ulcer pain and suggest a similar mode of origin (Bonney and Pickering 1946). Later the component of abdominal colic was added to the underlying dyspeptic pattern, suggesting abnormal peristaltic activity proximal to the sites of ulceration. As in more proximal peptic ulcers, bleeding was invariably followed by temporary relief of pain.

Of the various complications common to all peptic ulcers perforation has occurred in about 80% of all cases of primary jejunal ulceration. In a large number of cases it has been the mode of presentation. Preceding trauma has often been implicated; indeed, with deep-seated ulceration of so thin-walled a viscus it is not surprising that sudden alteration of intra-abdominal tension may be a precipitating influence. In a case of medicolegal interest the *British Medical Journal* (1906) reported that a jejunal ulcer was fatally perforated by a blow on the abdomen:

"The occasion afforded the coroner the opportunity of pillorying a member of the (medical) profession, and various newspapers some striking headlines."

Recurrent hæmatemesis and melæna, the outstanding diagnostic problem of our case, are much less common: we know of only 2 published cases (Schmilinski 1910, Murphy 1916). Stenosis of the jejunum has been described by Ebeling (1933).

We have consistently referred to primary jejunal ulcers as peptic ulcers, for on clinical and pathological grounds there seems very good reason to do so. Histologically their appearances are indistinguishable from those complicating gastro-enterostomy and from chronic gastric and duodenal ulcers; indeed, 2 cases have been published of the association of primary jejunal ulcers with ulcers in more proximal sites: with chronic gastric ulcer (Barber 1926) and with duodenal ulcer (Murphy 1916).

The quite phenomenally high level of acid secretion in this patient was of obvious ætiological importance. Even a conventional subtotal gastrectomy failed to reduce total acid secretion sufficiently to prevent the development of further jejunal ulceration. Although pH gradients were regrettably not studied, it is reasonable to assume that, even in the presence of normal pancreatic and bile secretion, the pH of jejunal contents during interdigestive phases was considerably lower than normal. The susceptibility of jejunal mucosa to acid-peptic ulceration is well known. What is of great interest is the negative observation that in the presence of such an abnormal degree of hyperchlorhydria the patient did *not* have a duodenal ulcer. In the genesis of duodenal ulcer it is clear that two factors are involved: the level of gastric acidity and factor X, the inherent susceptibility to ulceration of the duodenal mucosa. The elucidation of factor X, which may be due to local reflex ischæmia or to a defect in the local mucous protecting barrier (Hollander 1954), remains one of the most outstanding problems in the study of peptic ulcer.

After having been a surgical curiosity it is possible that the patient will eventually provide a hæmatological case-report, for the total removal of the stomach and a large part of the jejunum in a female so young is almost bound to lead to deficient absorption of both iron and vitamin B_{12}. From the point of view of deficient absorption of iron it is perhaps fortunate that, owing to hypo-ovarian function, she has no menstrual blood-loss.

Summary and Conclusions

The case is reported of a young woman who presented with symptoms of ulcer pain and in two years had at least five severe episodes of melæna due to primary ulceration of the jejunum. The diagnosis was made at laparotomy undertaken for perforation of the bowel. When recurrence of ulceration, with further perforation and hæmatemesis, followed subtotal gastrectomy, it was considered necessary to remove the remainder of the stomach.

Primary jejunal ulceration must be considered in patients with a history of ulcer pain whose stomach and duodenum appear normal on barium-meal radiography. Suggestive radiological signs are dilatation of the distal duodenum and jejunum with diminished peristaltic activity.

Perforation has been a common and hazardous complication of primary jejunal ulceration.

Treatment consists in excision of the affected jejunum. If preoperative studies reveal normal secretion of gastric HCl, subtotal gastrectomy, in addition, will probably suffice; but, if severe hyperchlorhydria is present, total gastrectomy must be considered.

We are extremely grateful to Mr. Hector Stewart and Dr. Gerald Moss for permission to cite records of the case whilst she was under their care, and Mr. R. Van Raalte for the photographs.

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PROLONGED ANURIA TREATED BY INFUSION INTO THE VENA CAVA

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THE management of prolonged anuria by continuous infusion into the vena cava was recently described by Russell et al. (1954). The following case further illustrates the use of this method in conjunction with biochemical control of electrolytes.

Clinical Record

Mrs. S, aged 44, was admitted to hospital on April 19, 1954, for repair of a prolapse. A Manchester operation was carried out on April 21, but because the patient was anæmic she was given an intravenous transfusion of one pint of group-O rhesus-negative blood before operation. During the operation there was considerable bleeding and it was decided to continue the transfusion. Blood had previously been cross-matched for her and was held in the hospital laboratory, but through an error the blood which was sent to the operating-theatre was for another patient, of similar name, who was also for operation that afternoon. This blood was group-A rhesus-positive, and the mistake was unfortunately not discovered until 300 ml. had been administered.

Management

Twelve hours later the patient had secreted only 1 oz. of urine, so the Bull régime of dextrose and peanut oil by intragastric drip was begun (Bull et al. 1949). During the next eight days the urinary output remained very low, as little as $^1/_2$ oz. being collected in twenty-four hours (fig. 1). Vomiting was troublesome from the second day, and on April 29, when her blood-urea had reached 361 mg. per 100 ml., she began to have profuse diarrhœa. 23 oz. of fluid was lost from the bowel on April 29, 85 oz. on the following day, and 24 oz. on the morning of May 1.

The timely appearance on this very day of the paper by Russell et al. (1954) prompted us to revise our plan of treatment. The patient was becoming extremely dehydrated and the alimentary tract apparently no longer afforded a satisfactory avenue for hydration and nutrition. Since further diarrhœa would probably have led to extreme dehydration and death, at midday on May 1 the Bull régime was discontinued and an infusion was begun through a 'Polythene' catheter passed up the saphenous and femoral veins of the right thigh into the vena cava. This was maintained for eleven days, and during this time the urinary output rose steadily to 107 oz. on May 11, when the infusion was discontinued. We had intended to leave it longer, but the onset of a sacral bedsore made this impracticable.

The constitution of the infusion (see table) was adjusted daily to give an adequate fluid intake, to maintain a reasonable alkali reserve, to ensure a sufficient calorie intake, and to achieve a balance of sodium and potassium. To prevent thrombophlebitis, 15,000 units of heparin was added daily to the 40% glucose solution. Heparin was not added to the less concentrated solutions. Estimations of the clotting time were made to ensure that the dosage was not excessive. Vitamins in the form of 'Becosym' (Roche) 1 ampoule, and ascorbic acid 100 mg., were given daily by intramuscular injection from May 3 until the patient returned to full diet.

Progress

From May 11 the patient was given fluids by mouth, and on May 14 light diet was begun. Although the urinary output continued to increase—indeed it reached a figure of 206 oz. on May 28—the concentrating-power of the kidney during this period remained seriously impaired, and the urea-clearance was therefore considerably diminished (fig. 1). This gradually

BIOCHEMISTRY OF BLOOD, URINE, FÆCES, AND VOMIT (FROM START OF INFUSION INTO VENA CAVA); AND FLUIDS GIVEN BY INFUSION AND BY MOUTH

Date (May)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	28
Days from onset of anuria	10	11	12	13	14	15	16	17	18	19	20	21	22	23	38
Blood															
CO_2-combining power (%)	23·6	46·8	33·8	39·5	40·4	49·0	41·0	47·0	59·5	46·2	55·1	56·0	48·1	40·4	59·5
HCO_3 (*m.eq. per litre*)	*10·6*	*21·1*	*15·2*	*17·6*	*18·0*	*21·9*	*18·4*	*21·0*	*26·5*	*20·8*	*24·6*	*25·0*	*21·6*	*18·0*	*26·5*
Chloride (mg. per 100 ml.)	324	310	300	295	285	275	327	330	354	342	376	385	390	400	364
(*m.eq. per litre*)	*91*	*87*	*85*	*83*	*81*	*78*	*92*	*93*	*100*	*97*	*106*	*108*	*110*	*113*	*103*
Sodium (mg. per 100 ml.)	340	296	290	360	290	290	300	335	330	310	325	340	305	300	290
(*m.eq. per litre*)	*149*	*130*	*127*	*157*	*127*	*127*	*132*	*146*	*144*	*135*	*142*	*149*	*133*	*132*	*127*
Potassium (mg. per 100 ml.)	27·6	18·4	22·6	20·2	20·2	27·2	23·0	18·0	17·6	16·8	16·8	17·2	16·8	21·6	17·6
(*m.eq. per litre*)	*7·1*	*4·7*	*5·8*	*5·2*	*5·2*	*7·0*	*5·9*	*4·6*	*4·5*	*4·3*	*4·3*	*4·4*	*4·3*	*5·5*	*4·5*
Hæmoglobin (g. per 100 ml.)	..	14·9	9·1	9·3	12·1	10·0	9·7	10·0	9·7	9·1	8·8	10·7	9·4	10·4	9·1
(*% Haden*)	..	*96*	*54*	*59*	*77*	*64*	*62*	*64*	*62*	*58*	*56*	*68*	*60*	*66*	*58*
Plasma proteins (g. per 100 ml.)															
Total	..	..	..	..	6·0	6·1	6·8	6·40	6·5	6·5	6·8	7·2	7·54	7·2	7·4
Albumin	..	..	..	..	2·1	2·3	2·5	2·76	2·8	2·5	2·3	2·7	2·66	2·7	2·8
Globulin	..	..	..	..	3·9	3·8	4·3	3·64	3·7	4·0	4·5	4·5	4·88	4·5	4·6
Urea (mg. per 100 ml.)	396	440	392	466	432	456	340	396	410	292	252	280	240	228	63
Urine															
Vol. per 24 hr. (ml.)	..	138*	280	450	620	720	1260	1700	2540	3000	1310	1905	2010	1380	3350
Specific gravity	..	1·012	1·008	1·008	1·008	1·008	1·008	1·007	1·009	1·012	1·010	1·009	1·008	1·010	1·003
Urea (g. per 100 ml.)	..	..	..	0·95	0·95	0·86	0·90	0·91	0·91	0·90	0·92	0·91	1·12	1·00	0·55
(g. eliminated in 24 hr.)	..	..	..	4·3	6·0	6·3	11·3	15·5	23·0	27·0	12·0	17·2	22·5	13·8	18·4
Salt loss (as NaCl) (g. per 24 hr.)	..	0·37	0·44	1·62	2·3	2·8	4·6	6·8	10·2	12·6	5·5	6·9	7·2	4·1	7·4
Sodium loss (g. per 24 hr.)	..	..	0·35	1·8	..	1·4	3·8	2·5	7·7	8·2	2·3	4·9	3·2	2·1	3·2
Potassium loss (g. per 24 hr.)	..	0·36	0·25	..	0·46	0·62	1·0	1·4	2·2	2·0	1·1	2·4	2·1	1·9	3·1
Vomit (v) *and Fæces* (f)															
Vol. per 24 hr. (ml.)	Nil	95 (v)	20 (v)	Nil	Nil	Nil	35 (v)	Nil	Nil	Nil	670(vf)	620 (v)	40 (v)	375 (v)	†
Salt loss (as NaCl) (g. per 24 hr.)	..	0·17	0·1	..	..	..	0·3	..	..	..	2·6	4·6	..	2·7	
Sodium loss (g. per 24 hr.)	..	..	..	..	..	..	..	..	..	..	..	0·8	..	0·5	
Potassium loss (g. per 24 hr.)	..	..	..	..	..	..	..	..	..	..	..	1·0	..	0·6	
Fluids by infusion into vena cava (oz.)															
Dextrose (40%)	20	20	40	20	40	20	15	40	40	..	‡	..	..	..	..
Sodium lactate (in water)	40	20	20	20	..	..	..	..	..	..	..	..	..	..	..
(in normal saline)	..	..	..	..	40	..	..	..	..	..	..	..	..	..	..
Sodium citrate (3·8%)	..	..	..	..	..	..	10	..	..	..	..	..	..	..	..
Dextrose (5%) (in water)	60	..	..	..	..	..	30	10	10	..	..	..	..	..	..
(in saline)	..	..	..	..	..	40	..	60	60	10	..	..	..	..	..
Normal saline	..	..	..	..	..	10	20	..	..	..	..	..	..	..	..
Blood	..	..	..	..	20§	..	..	..	..	40	..	..	..	40‖	..
Fluids by mouth (oz.)															
Water	12	15½	13	2½	Nil	2	..	..	..	..	..	..	2	..	..
'Lucozade'	..	..	..	..	..	..	5	14	52	20	..	..	..	..	..
Milk	..	..	..	..	..	..	..	..	..	20	20	..	..	50	..
Special mixture¶	..	..	..	..	..	..	..	..	..	86	70	30	104	65	..
Other beverages (tea, fruit-juice, &c.)	..	..	..	..	..	..	..	..	..	..	36	35	3	5	..

* Catheter specimen.
† No further vomits occurred before patient's discharge, except for 166 ml. on 25th day. Only liquid fæces, suggesting onset of diarrhœa, were collected for analysis. Small solid stools were disregarded.
‡ Catheter removed.
§ Packed cells.
‖ Peripheral vein.
¶. This mixture consisted of *M*/6 sodium lactate (4 fl. oz.), potassium chloride (gr. 7½), sodium chloride (gr. 22½) lactose (gr. 600), and water with fruit-juice (10 fl. oz.).

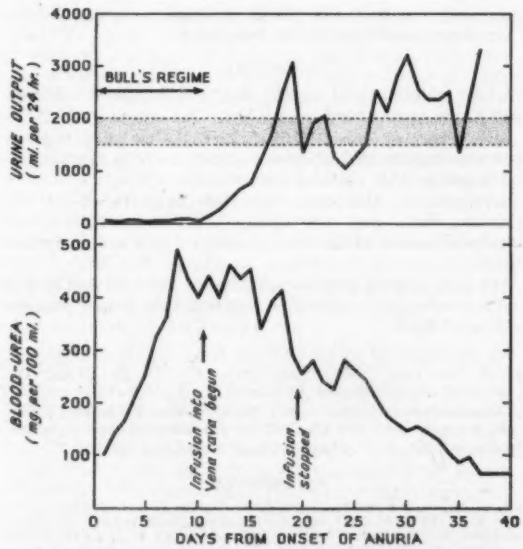
URINE OUTPUT (ml. per 24 hr.)
BULL'S REGIME
BLOOD-UREA (mg. per 100 ml.)
Infusion into Vena cava begun
Infusion stopped
DAYS FROM ONSET OF ANURIA

Fig. 1—Relationship between urinary output and blood-urea.

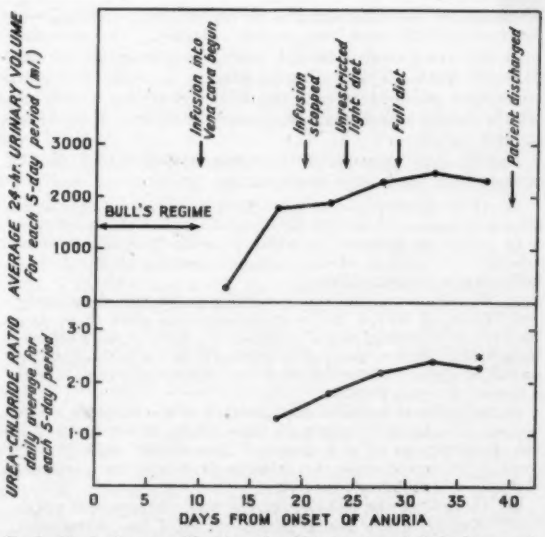
AVERAGE 24-hr. URINARY VOLUME For each 5-day period (ml.)
Infusion into Vena cava begun
Infusion stopped
Unrestricted light diet
Full diet
Patient discharged
BULL'S REGIME
UREA-CHLORIDE RATIO daily average for each 5-day period
DAYS FROM ONSET OF ANURIA

Fig. 2—Rise in the urea-chloride ratio which accompanied the increased output. * Three-day average ratio.

improved, however, and with the administration of adequate fluids the blood-urea level gradually fell, and on the patient's discharge from hospital on June 2 it was only 67 mg. per 100 ml. Three weeks later it had fallen to 51 mg. per 100 ml., but the urea-clearance remained only 36% of normal. A month later the blood-urea was 42 mg. per 100 ml. and the urea-clearance had risen to 48% of normal. The most recent test, carried out on Sept. 29 (162 days after the onset of the anuria), showed a blood-urea of 35 mg. per 100 ml. and a urea-clearance 54% of normal. Further improvement in the renal function is confidently expected.

The patient's gynæcological condition remained satisfactory throughout, and the repair of the prolapse appears to have been successful. The patient's general condition is now good, and clinically she appears normal.

BIOCHEMICAL INVESTIGATIONS

Analytical Methods

Blood-urea was estimated by the colorimetric micro-method of Archer and Robb, described by King (1951); urinary urea by the hypobromite method. Serum-proteins were estimated by the biuret method of Wolfson et al. (1948). Plasma-chloride was estimated either by the method described by King (1951), or direct in the plasma without deproteinisation by the rapid method of Schales and Schales (1941); direct titration with silver nitrate, using potassium chromate indicator, was employed for its estimation in urine, vomit, and fæces. Sodium and potassium were estimated throughout on an EEL flame photometer. Carbon-dioxide combining-power was determined by the Van Slyke method.

Results

For the first nine days of treatment, before the start of the infusion into the vena cava, only the blood-urea was estimated daily: its level rose steeply as the period of anuria lengthened (fig. 1). From the tenth day of anuria, when the infusion into the vena cava was begun, detailed analyses were made of blood, urine, vomit, and of the one specimen of liquid fæces passed (see table). The blood constituents mentioned above were estimated daily until the twenty-third day—i.e., three days after the intracaval infusion was stopped. By then the blood-urea level had dropped to approximately half its peak value, and the over-all biochemical picture was much more satisfactory. Clinically the patient was improving daily, but her veins had suffered from the repeated venepunctures. It was therefore decided to discontinue the daily blood-chemistry investigations except for blood-urea and hæmoglobin estimations, which could be done on samples obtained by finger-prick. A final complete examination was carried out on the twenty-eighth day.

The urine was examined daily for twenty-four-hour volume and specific gravity. Chlorides, sodium, and potassium were estimated with a view to making good the daily loss of these constituents; and the daily output of urea was also determined. These procedures were also continued until the time of the patient's discharge. The results obtained from analysis of urine, vomit, and liquid stool for the thirteen days of detailed investigation following the setting up of the infusion into the vena cava are set out in the table, below the corresponding results obtained from blood analysis.

The daily urine volumes up to the time of the patient's discharge, together with the values for blood-urea, are shown in fig. 1. The diuresis which rapidly followed the start of the infusion was accompanied by a significant drop in the blood-urea level. Although subject to rather large daily fluctuations, the flow of urine continued to be satisfactory after the polythene catheter was removed and oral fluids were begun. The blood-urea, which was 440 mg. per 100 ml. immediately after insertion of the catheter, had fallen to 252 mg. at the time of its removal, and to 63 mg. at the time of the patient's discharge.

The urine was of low specific gravity throughout (1·003–1·012). The usual value was 1·006–1·009, and varied approximately in inverse relation to the volume. The urea concentration was consistently low and varied with the specific gravity. The highest value recorded was 1·12 mg. per 100 ml. (usually it lay between 0·7 and 0·9 mg. per 100 ml.); which suggests that during the initial period of renal recovery the concentrating-power of the kidney was poor and elimination of urea was effected mainly by an increase in the urinary volume. A large urinary output was encouraged by allowing the patient, who was very thirsty, to drink fluids ad lib. Muirhead et al. (1948), in their study of a series of similar cases, showed that an increase in the urea/chloride ratio took place concurrently with recovery, and they suggested that this might be of prognostic value. The urea/chloride ratio was therefore determined daily, and was found to rise steadily—a point brought out more clearly when the five-day averages were plotted (fig. 2). The rise is proportionate to the increase in the average twenty-four-hour urinary volume for each five-day period.

Discussion

This case demonstrates, firstly, how very easy it is, despite routine precautions, to give an incompatible blood-transfusion to an unconscious patient. To prevent a recurrence of this, blood is now issued from our hospital laboratory only on receipt of a written requisition bearing the patient's full name, age, and registration number. Only the timely appearance of the paper by Professor Russell and his colleagues enabled us to avoid a fatal outcome, since the copious diarrhœa made the Bull régime ineffective. At the start of the extensive

biochemical investigations one of the most dangerous features of this case was severe acidosis. The infusion into the vena cava enabled prompt rectification of the acidosis with $M/6$ sodium lactate, as well as rapid correction of dehydration resulting from the diarrhœa, which would not have been possible with a peripheral venous infusion.

In the management of this case several minor points arose which are worth mentioning:

(1) It is inadvisable to use the intravenous catheter to obtain samples of blood for analysis since the procedure may disturb it, as well as increase the risk of sepsis. It may, however, be used to obtain essential samples of blood if no peripheral vein is available.

(2) Prophylactic procaine penicillin (1,000,000 units daily) was begun on May 1, but was discontinued after three days because an urticarial rash developed. In spite of daily bladder lavage, the urine subsequently became infected with *Staphylococcus pyogenes*, but the infection was successfully treated with a course of erythromycin.

(3) In order to prevent displacement of the catheter it was necessary to limit the patient's movements, which resulted in the development of a bed-sore. This healed rapidly with routine treatment once the catheter had been removed and the patient's mobility restored.

(4) In view of the risks attendant upon intravenous potassium therapy, a low serum-potassium level was disregarded until potassium chloride could be administered cautiously by mouth.

(5) When the time came to start feeding the patient orally, lactose was chosen in preference to glucose, since it is less sickly and therefore less likely to cause vomiting which, at that stage, might have been dangerous.

Summary

A case of prolonged anuria due to incompatible blood-transfusion is recorded.

After ten days on the Bull intragastric drip régime, diarrhœa supervened of such severity as to make further treatment by this method ineffective.

Infusion into the vena cava was substituted for the next ten days, and this made possible extensive biochemical control of fluids and electrolytes until diuresis began.

By using a 40% glucose solution in the infusion it was possible to supply sufficient calories in a much smaller volume of fluid.

We are indebted to Dr. Patrick Kidd for his interest and advice; to Dr. C. J. Thornberry, Dr. D. B. Stott, Dr. H. F. Juckes, and Sister M. Curtis for their devoted work in the management of this case; and to Mrs. P. Limrick, Mr. B. F. Savage, and Mr. G. C. Ross for their skilled technical assistance. Mr. F. V. Hughes constructed the figures.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

Anæmia in General Practice

THE section of general practice met on Dec. 15, with Dr. R. J. MINNITT, the president, in the chair, to discuss the Management of Anæmia in General Practice.

Dr. DOUGLAS FRENCH described the incidence of different types of anæmia in his practice of some 5000 patients. Patients with iron-deficiency anæmia averaged 80 a year; half of these cases were associated with pregnancy. In eleven years he had seen only 13 patients with pernicious anæmia, 2 with chronic myeloid leukæmia, 1 with acute leukæmia, and altogether 10 with the rare types of blood-diseases; he had 4 hæmophiliacs in his practice, 3 of them in one family. These figures meant that, judging by his experience the general practitioner had to deal almost exclusively with iron-deficiency anæmia; other types were relatively rare and needed hospital investigation for proper diagnosis. It followed that vitamin B_{12}, folic acid, liver extracts, or mixtures containing these substances were rarely needed, and they should in fact never be used unless there was a clear therapeutic indication for them. Dr. French did blood-counts—red cells, hæmoglobin, white cells (total and differential)—on all anæmic patients. Anæmia was rarely very urgent, and it paid to spend a few days on correct diagnosis rather than start treatment which might prove after some weeks to be incorrect. The colour-index was a useful guide to sorting cases; if it is over 1·0, the patient should be sent to hospital and no treatment should be given. If the colour-index was about 1·0 iron-deficiency anæmia was the most likely diagnosis, so treatment with iron was given; but the patient was sent to hospital if the response was not up to expectations. It was important to regard iron-deficiency as a physical sign, not as a diagnosis per se; a cause for the anæmia must be sought—in particular, tuberculosis, peptic ulcer, complications of pregnancy, malignant disease, rheumatoid arthritis, and bleeding hæmorrhoids must be considered.

In treating the anæmia, "an air of expectant scepticism" should be maintained, and one should be careful not to spoil clues for subsequent specialist examination, if this should be needed. Oral iron should give a hæmoglobin rise of 1% (0·148 g. per 100 ml.) per day; no great difference was found between inorganic salts, such as ferrous sulphate, and organic salts, such as ferrous succinate. Intravenous iron gave a rather more rapid rise, and Dr. French used this preparation for: (1) all patients with an initial hæmoglobin of less than 60% (9 g. per 100 ml.); (2) all patients with hypochromic anæmias of pregnancy; (3) the minority of patients who genuinely failed to respond to oral iron; and (4) all cases in which the diagnosis was in doubt. The iron injections were given daily if possible, since this kept the patient interested, and the course was quickly completed. The dose used was 25 mg. Fe per 1% hæmoglobin deficit; and this sufficed, he found, to give a reticulocyte rise of 8–10% on the fifth to eighth day. If intravenous iron did not restore the blood picture to normal, it was important to look for chronic blood-loss and the other diseases already mentioned.

In pregnancy the presence of hydræmia must be remembered; Dr. French suggested from his own observations that a red-cell count of 4,000,000 per c.mm. and hæmoglobin of 80% (12 g. per 100 ml.) at the twentieth week was normal. He pointed out that there was a physiological rise of hæmoglobin on the day of labour, a fall on the first three days of the puerperium, and then a gradual recovery to normal levels in the next six weeks; these normal variations tended to be forgotten when assessing the value of iron preparations in pregnancy anæmia. In the true iron-deficiency anæmia of pregnancy, intravenous iron was the most effective treatment.

Dr. M. C. G. ISRAËLS agreed that the colour-index provided a useful guide to the practitioner's course of action, and he pointed out that almost all the patients whose anæmia was not due to iron deficiency needed at least outpatient hospital investigation for proper differential diagnosis. A colour-index about 1 suggested malignancy (especially of the alimentary tract), reticuloses (including Hodgkin's disease), or uræmia; but some of these patients proved to have primary iron-deficiency anæmia. A colour-index over 1 suggested quite a different group of diseases: pernicious anæmia,

leukæmia (especially the aleukæmic forms), acquired hæmolytic anæmia, sprue and non-tropical steatorrhœa, and aplastic anæmia. Dr. Israëls dealt with the differential diagnosis of these conditions and pointed out how important it was *not* to give vitamin B_{12}, folic acid, or liver, or any of the so-called "complete" hæmatinics to these patients before the diagnosis was settled, since these substances were liable to confuse the diagnostically critical examination of the bone-marrow. He emphasised that the various hyperchromic anæmias all needed quite different treatment.

In pregnancy the physiological hydræmia meant that reliance could not be placed on the colour-index, which might often be over 1·0 without there being a megaloblastic change in the marrow. The diagnosis of megaloblastic anæmia of pregnancy could be settled only by bone-marrow examination, and this should certainly be done for every patient whose hæmoglobin level was below 9 g. per 100 ml. (70%) and who did not respond to parenteral iron. If megaloblastic changes were found, treatment with folic acid soon restored the blood picture.

Dr. CHARLOTTE NAISH asked about anæmia in old persons which changed from hypochromic to hyperchromic with iron treatment; given liver they improved. Was not this a case for the use of the condemned "blunderbusses"? The answer was: definitely No; the type of hyperchromic anæmia should be established first, and Dr. Israëls drew her attention to the fact that folic acid must not be given to patients with pernicious anæmia.

Dr. JOHN HUNT said that blood-counting was time-consuming for the general practitioner; would not a hæmoglobin estimation be enough? Dr. FRENCH thought that if the hæmoglobin was less than 85% the red cells should be counted.

Dr. R. M. S. MCCONAGHEY remarked that it was very important to impress on patients with iron-deficiency anæmia that the treatment had to continue for two to three weeks before the patient felt really improved; otherwise the patient was liable to become discouraged and stop treatment too soon.

Dr. J. N. M. CHALMERS mentioned the new intramuscular-iron preparations and said that in one case he had seen a rise in hæmoglobin from 35 to 90% with three weeks' treatment, during which 53 ml. of 'Imferon' was given. This material gave rise to local discomfort rather more commonly than some reports suggested.

Other speakers pointed out that Dr. French used a lot of intravenous iron; was it really necessary to use it so often in preference to oral iron? Dr. FRENCH agreed that it was not really necessary. Most patients could tolerate one or other of the many oral iron preparations. He had been working on the effects of these intravenous preparations, and they did have the advantage that the doctor could be sure that the patient had received a proper dose.

Reviews of Books

Clinical Psychiatry

W. MAYER-GROSS, M.D. Heidelberg, F.R.C.P., director of clinical research, Crichton Royal Mental Hospital, Dumfries; ELIOT SLATER, M.A., M.D. Camb., F.R.C.P., D.P.M., physician in psychological medicine, The National Hospital, London; MARTIN ROTH, M.D. Lond., M.R.C.P., director of clinical research, Graylingwell Hospital, Chichester. London: Cassell. 1954. Pp. 652. 50*s*.

THIS is the most considerable textbook on psychiatry yet published, or likely to be published for some time, in English. Its bibliography is far more extensive and international than is usual. The legal aspects of psychiatry are reviewed as they affect not only Britain and America, but also France, Germany, Scandinavia, and other countries. Mental defect is discussed early, affording a clear introduction to those many conditions where psychiatric syndromes direct attention to a more primary disorder, whether toxic, inflammatory, handicapping, or primarily psychotic. In describing the gross or minute structural lesions which may first present as mental disorder the authors combine sound pathology with respect for psychiatric observation. The sections on the epilepsies and cerebral trauma are written in a highly stimulating manner; and the critical assessment of leucotomy as a treatment for schizophrenic disorders should convince many that modern psychiatrists are well aware of both the losses and the gains achieved through recent advances in treatment. Some will regret that the descriptions of psychopathic states and neurotic personalities have been combined in one large chapter. So much that these authors write of the history of modern concepts is good that clearer views on the nature of psychopathic states might have been expected of them. But the chapter as a whole contains many illuminating passages: the unstable drifter, the vagrant, and the sexually abnormal are all well described. Genetics is more fully dealt with than usual. The authors claim—and back their view with statistics—that the results of analyses of large groups of patients yield more trustworthy evidence on the causes of mental disorder than does psycho-analysis by Meyerian or Freudian methods, of small numbers. It seems likely that most criticism of the book will be concerned with this claim. Dr. Mayer-Gross and his colleagues have followed good precedent in collecting, collating, and analysing an abundance of data, and much support is offered for their deductions. Psychotherapists who wish to refute these must face the challenge of their carefully collected case-material. Some will hope that the authors' determinism will be modified by the accumulation of yet more facts.

Chemical Pathways of Metabolism

Vol. II. Editor: DAVID M. GREENBERG, department of physiological chemistry, University of California. New York: Academic Press. 1954. Pp. 383. $9.50.

THE second volume, which completes this treatise, follows hard on the first.[1] This time the contributions are all from laboratories in the United States. The first five deal with amino-acid metabolism, and the others are on the purines and pyrimidines, the nucleotides and nucleosides, and heme and chlorophyll. They are clearly written with enough structural formulæ to make them easy to follow. Those who have not been closely associated with this kind of work will be amazed at the way in which our knowledge of all this intermediary metabolism has been enhanced by the use of radioactive isotopes. How could we ever have found out without them that the C atom lying between the two atoms of nitrogen is derived from formate in the purines but from CO_2 in the pyrimidines?

The Brompton Hospital

The Story of a Great Adventure. MAURICE DAVIDSON, M.A., D.M. Oxfd, F.R.C.P., consulting physician to Brompton Hospital; F. G. ROUVRAY, O.B.E., late house governor, Brompton Hospital. London: Lloyd-Luke. 1954. Pp. 152. 21*s*.

Brompton Hospital owes its inception to Philip Rose, a solicitor. He was impressed by the facts that consumption was the most common and fatal disease, destroying a third of the population, yet the doors of all hospitals were closed against it. His attention had been drawn to the problem when he was unable to obtain hospital treatment for a consumptive clerk employed by his firm.

The hospital opened in the Manor House near the Royal Hospital, Chelsea, on Sept. 13, 1842. There was accommodation for 20 patients and it is hardly surprising to learn that this was nothing like enough. An extension of the house was found to be impracticable, and the committee accordingly decided on the more ambitious scheme of erecting a new building to accommodate, by successive additions, 100 to 200 inpatients. The site chosen was at Brompton, "a village

1. See *Lancet*, 1954, ii, 902, 1110.

in Kensington, remarkable for the salubrity of its air and surrounded entirely by nurseries and garden grounds which were amongst the first cultivated in the country." The ground was formerly part of a botanical garden. The new building came into use in 1846 and since then the hospital has gone from strength to strength. The new wards were ventilated by a forced supply of warmed air, which was held to provide "for the poor a climate nearly approaching that of southern latitudes, the advantages of which can only be enjoyed by the more favoured portion of the community."

There are short biographies of the doctors who have done so much to gain for the hospital its great international reputation—among them Richard Quain, Burdon Sanderson, Douglas Powell, Kingston Fowler, and Percy Kidd. The book is intended for lay readers and it will appeal to them; but it will appeal most to those who are proud to have been associated with "Brompton."

The Biochemistry of Semen

T. MANN, M.D., SC.D., PH.D., F.R.S., reader in physiology of animal reproduction, University of Cambridge. London: Methuen. New York: John Wiley. 1954. Pp. 240. 16s.

As Dr. Mann points out in his preface, information on the physiology of semen, and particularly its chemical aspects, is scattered among books and journals, many of which are inaccessible. Lack of a comprehensive and up-to-date treatise has handicapped the now numerous biochemists, clinicians, zoologists, and veterinarians concerned with this subject. Dr. Mann has himself made many important contributions to semen chemistry and physiology since he became especially interested in this subject in 1944, and in this scholarly book he condenses an immense amount of information into a relatively small space. The bibliography alone includes nearly a thousand items.

He begins with a synopsis of the principal structural and physiological features of spermatozoa and the accessory glands. There is a detailed account of the physical and chemical properties of semen—many mammalian, as well as non-mammalian species receiving due consideration—and of the methods used for the evaluation of semen quality. Next, the influence of extraneous factors—such as hormones, sperm-egg interacting substances, spermicidal agents, semen dilutors, ionising radiation, and deep-freezing—is described. Other chapters deal with metabolic processes which supply the spermatozoa with energy for their motility and survival, and special attention is given to seminal fructose (the study which Dr. Mann has made peculiarly his own); the occurrence of inositol, lipids, citric acid, and nitrogenous bases including spermine, choline, and ergothioneine; and the protein constituents and enzymes of spermatozoa and seminal plasma.

Advances in Ophthalmology (Vol. VII–VIII. The Hague: Uitgeverij Dr. W. Junk. 1954. Pp. 758. 125 guilders).—This double volume of *Documenta Ophthalmologica* contains the proceedings of the symposium on the retinal circulation held in Strasbourg in 1951, which survey ophthalmodynomometry in its physiological and clinical implications. The proceedings of a symposium on squint held in 1943–44 by the Dutch Ophthalmological Society while Holland was under Nazi occupation are also included. Some of the material is now out of date, but the account of the genetic aspects of the affection by Waardenburg, and the papers on binocular vision and fusion movement by F. P. Fischer and J. W. Wagenar, are both useful. The volume also includes monographs by Roelofs on optokinetic nystagmus and by Yap Kie Tiong on experimental keratoplasty.

Heart (2nd ed. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1954. Pp. 680. 114s.).—Dr. Aldo Luisada has added two or three short chapters in this new edition of his book and made many changes to bring the text up to date. He continues to classify cardiac lesions on an anatomical rather than an ætiological basis, a method which fails to give the correct perspective for such lesions as mitral stenosis and constrictive pericarditis. The first chapter lists those who have made outstanding contributions to cardiology from 1530 to the present day, but no British physician is mentioned after 1912 though two British surgeons are included. The book is well produced on heavy glossy paper, but the price has doubled since the first edition.

New Inventions

A SMALL URINARY-FISTULA SUCTION-CUP

A URINARY fistula is tedious not only to the patient, whose skin often becomes excoriated, but also to the nurses, who have to keep changing soaked dressings. Furthermore large quantities of dressings are required.

Fig. 1.

Hamilton Irving introduced his suprapubic apparatus in an attempt to reduce these difficulties; but it was cumbersome and (especially where the patient was obese) it often leaked and caused pressure sores under the retaining straps. The basic principle of draining the urine into a receptacle without a tube in the fistula was sound, however, and I have therefore used it in designing a suction-cup (fig. 1) I describe here. This is small and very simple to use and works equally well with little or no attention, whatever the configuration of the patient. Being made of 'Perspex' it should be sterilised by a cold antiseptic solution, and it is fixed over the fistula with strips of 'Elastoplast.' The air inlet is placed uppermost, and the tube, draining from the lowest point, is connected by small-bore pressure-tubing to a Roberts silent suction-pump. The patient may thus be kept dry both in and out of bed.

Although this cup was originally designed for urinary fistulæ it may be used with equal success over any fistula draining thin fluid wherever situated. Its size is adequate for almost every fistula and yet small enough not to interfere with wound dressings. The air inlet (A) (fig. 2) allows continuous suction to be used without creating a partial vacuum and consequent soreness of the skin drawn into the cup. Furthermore, a current of air is continuously passing over the skin around the fistula, thus preventing it from becoming sodden. The inner lip (B) not only prevents urine from seeping between the cup and the skin but also helps the cup to fit more comfortably by increasing the area of contact between the two. The connection (C) to which the rubber tube is attached is angled to allow the cup to lie flat even on an obese patient. The cup, being made of perspex, is both light and inexpensive to make.

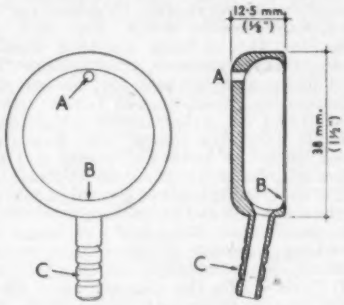
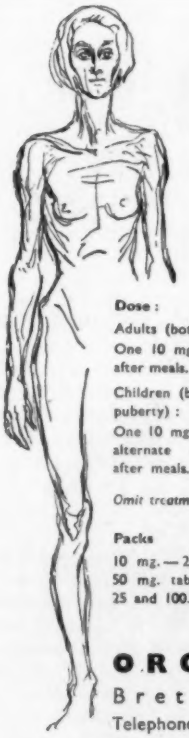


Fig. 2.

I am indebted to the Genito-Urinary Manufacturing Company for making this cup for me from the prototype supplied by Mr. R. A. Crispin, to Mr. J. D. Foy for the drawing, and to Mr. F. Wardlaw for the photograph. This same company also market the Roberts suction pump.

Withington Hospital, Manchester

H. F. SMITH
B.SC., M.B. Manc., F.R.C.S.



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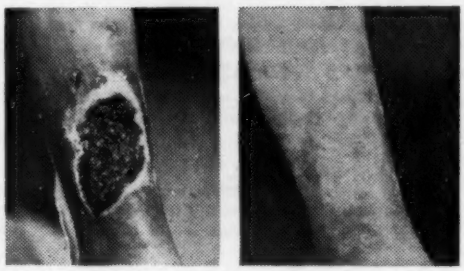

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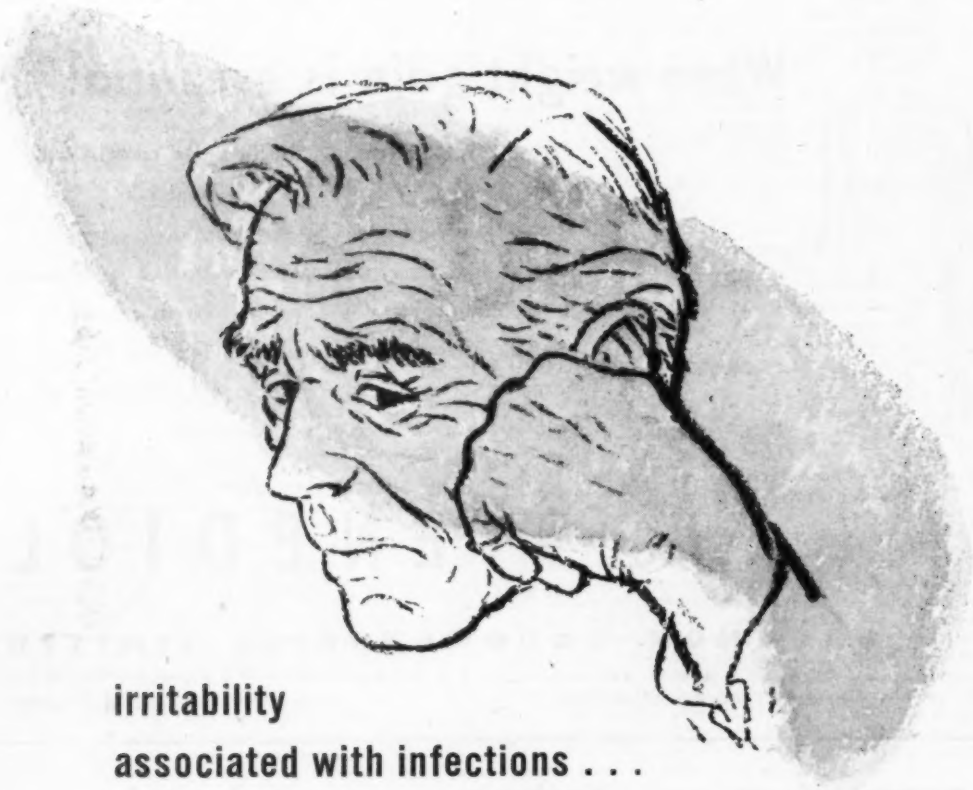

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THE LANCET
LONDON: SATURDAY, JAN. 8, 1955

Adrenalectomy for Hypertension

IT is more than twenty years since adrenalectomy was first done for the relief of hypertension, and upward of 200 cases treated in this way have now been described.[1–9] When DECOURCY [2] in 1934 reported the favourable effect of partial bilateral adrenalectomy in 8 patients with severe hypertension, he stated his belief that elevation of the blood-pressure was due to excessive secretion of adrenaline by the adrenal medulla. There is now good evidence that, except in phæochromocytoma, hypertension is not associated with increased secretion of adrenaline or noradrenaline, and it is the adrenal cortex that plays the more important part in pathogenesis. Whether its rôle is primary or secondary has been debated at length.[10] In support of a primary rôle is the clinical evidence that many patients with hyperadrenalism have hypertension and that removal of an adrenal cortical tumour or total or subtotal resection of bilaterally hyperplastic glands abolishes the symptoms and signs of Cushing's syndrome and often restores the blood-pressure to normal. Conversely hypotension is a feature of Addison's disease. THORN and his associates[9] have reported that the blood-pressure fell to normal in 2 hypertensive patients in whom adrenal insufficiency developed; and in 1 of them hypertension recurred when deoxycortone was given. But there is still no evidence that essential or renal hypertension is associated with increased adrenocortical activity or with the formation of abnormal adrenocortical hormones, and the majority opinion is that adrenocortical hormones have a secondary action which allows other factors to elevate the blood-pressure. GOLDBLATT [11] first observed that hypertension induced experimentally by constriction of one renal artery could be abolished by adrenalectomy. Other workers [12 13] have shown that in rats adrenalectomy abolishes the hypertension which follows nephrectomy in single animals or in animals linked in parabiosis. There is some evidence that the adrenal glands maintain this reniprival hypertension through their action on water and salt metabolism,[14] because at least in single animals ingested sodium chloride is a partial substitute for the adrenocortical hormones.

Adrenalectomy is much safer now that it can be followed by adequate substitution therapy with cortisone (though in some cases deoxycortone is also required). The results are difficult to assess, for several reasons. Observations on the effects of rest alone,[15] of hypotensive drugs,[16] and of sympathectomy [17] have shown that spontaneous variations in the blood-pressure may be profound, and that any operation may cause a fall in blood-pressure. Hence it is difficult to obtain satisfactory controls. Furthermore the results of adrenalectomy have been assessed by different criteria—in some instances by the effect on the blood-pressure alone, in others by the effect on symptoms and signs. Nor has the operation been uniform. In most cases the patient has undergone subtotal bilateral adrenal resection; and some, but not all, of these patients have required postoperative substitution therapy. Only a few have undergone total adrenalectomy.[9] Understandably there has often been "surgical polypharmacy"—adrenalectomy combined with removal of a diseased kidney or with bilateral sympathectomy. In the largest published series [5] Adson-type sympathectomy has been combined with total or subtotal adrenalectomy. Finally some of the patients have had essential hypertension, and others unilateral or bilateral renal disease. Since the operation is experimental, it has been undertaken mainly where the hypertension has been severe (diastolic pressure greater than 120 mm. Hg), the patient has failed to respond to intensive medical treatment, and there has been evidence of progressive damage to the heart, kidneys, brain, or—particularly—the eyes. Because of the high mortality from operation and short postoperative survival in patients with nitrogen retention, any impairment of renal function is now accepted as an absolute contra-indication to adrenalectomy.

Of the 125 patients operated on by the Philadelphia group [5] about a third had a reduction in blood-pressure to 150/100 mm. Hg, and in a further quarter or so the diastolic pressure after operation did not exceed 110 mm. Hg. BOWERS [1] claims that, in a series of 27 patients operated on, all but 1 of the 21 survivors subsequently became normotensive. DECOURCY [2] claims similarly good results; but in view of the spontaneous fluctuations in blood-pressure it is difficult to assess the result when only isolated readings are given. The Boston group,[9] who did total adrenalectomy alone, give more detailed blood-pressure readings. Of 12 patients operated on, 9 survived three months or longer; and of these, only 2 showed a definite fall in blood-pressure. Despite a profound fall in pressure, some patients have died soon after operation of coronary thrombosis or cerebrovascular accidents. On the other hand some patients have been relieved of their symptoms, and the eye-ground changes have regressed without any significant change in blood-pressure—a response that has also been observed after sympathectomy alone. One of the most striking changes after adrenalectomy is increased loss of urinary sodium and chloride, and in several patients this has led to the disappearance of congestive cardiac failure or pulmonary œdema. Although a significant fall in blood-pressure late in

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12. Ledingham, J. M. *Clin. Sci.* 1951, **10**, 423.
13. Floyer, M. A. *Ibid.* p. 405.
14. Ledingham, J. M. *Ibid.* 1954, **13**, 535, 543.
15. Watkin, D. M., Froeb, H. F., Hatch, F. T., Gutman, A. B. *Amer. J. med.* 1950, **9**, 441.
16. Morrison, B. *Brit. med. J.* 1953, i, 1291.
17. Evelyn, K. A., Alexander, F., Cooper, S. R. *J. Amer. med. Ass.* 1949, **140**, 592.

convalescence has always been preceded by increased excretion of sodium, loss of this electrolyte is not always accompanied by a decrease in basal blood-pressure. ROSENHEIM [8] has reported a case in which there was severe postoperative hypertension despite biochemical findings which indicated advanced adrenal insufficiency. Thus the rôle of the adrenocortical hormones and electrolytes in maintaining hypertension remains uncertain. In the words of JEFFERS et al.[5]:

"This is an experimental approach which cannot at present be recommended as a treatment for hypertension. . . . As in the case of sympathectomy, one cannot predict which patients will respond with improvement nor can we discern why certain patients with adequate renal function have failed to improve after operation."

Peripheral-nerve Injuries

EARLY in the 1939–45 war the Medical Research Council appointed a Nerve Injuries Committee under the chairmanship of the late GEORGE RIDDOCH, and this formed a focal point for the five centres for nerve injuries which were set up as part of the Emergency Medical Service. The collaboration of the Services and the Ministry of Pensions ensured that large numbers of patients with serious nerve injuries reached these centres and attended for review for several years after operation. Although the staffs at the five centres naturally approached the problem of peripheral-nerve injuries differently, certain standards of thoroughness, methods of examination, and criteria of recovery were followed at each centre, so that experience gained at one could be measured against that at another, to the advantage of both. This vein of uniformity has enabled the Nerve Injuries Committee of the M.R.C. to present the combined experience of all centres in a special report.[18]

Some fundamental experimental work on the processes of nerve degeneration and repair was being done at Oxford by a team under the stimulating guidance of J. Z. YOUNG. These early studies showed that after a crush injury in which there was degeneration of the axon and myelin sheath the axon tips regenerated at the rate of about 4 mm. a day. They also showed that, besides the time taken in the axon tips travelling along the "Schwann tubes," there was an initial delay at the site of injury and some delay between the tip of the axon reaching the end-organ and the return of function. In laboratory animals this stage of functional recovery was reached at a rate of 2–3 mm. a day; and H. J. SEDDON, P. B. MEDAWAR, and H. SMITH (1943) found that in man likewise the radial nerve regenerated steadily, though at the rather slower rate of 1·5 mm. a day. RUTH BOWDEN summarising later work, now shows that the rate of recovery gradually falls off in covering the fairly long distances for nerve regeneration in man; and she points out that the closer the lesion to the spinal cord the faster is the rate of advance. But with a high lesion, though the initial progress is faster than with a low one, the outlook is not on that account better.

Peripheral-nerve injuries give rise to difficult problems in diagnosis and in treatment. An excellent illustrated pamphlet, prepared by Sir JAMES LEARMONTH,[19] was widely used during the war and was no doubt responsible for many patients being sent to a nerve injuries centre for fuller investigation. Here exhaustive clinical examination was supplemented by sweating and electrical diagnostic tests, and in Edinburgh by a detailed study of the vascular changes in nerve injury (described by R. L. RICHARDS in the report). The many early difficulties experienced by A. E. RITCHIE and P. BAUWENS in electrical diagnosis of nerve injury led to the construction of special apparatus to deliver a "square" wave, the intensity and duration of the stimulus being variable. RITCHIE rightly suggests that the widely used galvanic and faradic stimulators for electrical diagnosis should be replaced by a simple stimulator delivering two different lengths of shock, of about 1 and 300 m. sec. Denervated muscle would require a substantial increase in intensity in changing from the long to the short shock, but a normal muscle would not.

R. B. ZACHARY and R. ROAF have analysed 1500 case-records of lesions in continuity, and correlated the clinical and pathological findings in a considerable proportion of these. The steps in the diagnosis of a lesion in continuity are: (1) distinction between a degenerative and a non-degenerative lesion; and (2) subdivision into cases of complete and of incomplete paralysis, bearing in mind that anomalous innervation is common. Of 739 cases of complete paralysis due to open injuries, 621 had complete or partial division of the nerve—a strong indication for exploratory operation with a view to repair. Among closed injuries causing complete paralysis, division (complete or partial) was very much less common (11 out of 157). Even incomplete paralysis due to partial division is sometimes amenable to repair, and ZACHARY and ROAF define those syndromes which are compatible with partial division of the nerve. Repair of nerve injuries by direct suture remains the surgeon's main contribution. Criteria of recovery at all five centres were similar, and well over 1000 cases of nerve suture which had been followed up for at least three years have been analysed by ZACHARY. Results are best after suture of the radial nerve; worth-while improvement ensues in about two-thirds of the cases. Suture of the median nerve is followed by return of sensibility to the tips of the fingers in half the cases; and even with the ulnar nerve some function returns to the interossei in nearly the same proportion. Improvement after repair of the sciatic nerve has often been regarded as so slight that amputation has been advised when this nerve is divided. Yet the calf muscle can become strong in at least half the cases; and although there is little sensory recovery most of the patients can feel a strong painful stimulus in the foot. Moreover, even with no sensory recovery at all the foot is by no means useless, provided the skin and joints are well cared for.

One of the most remarkable features of the surgery of peripheral nerves in the late war was the establishment of nerve-grafting as a reliable measure when direct suture was impossible or unlikely to produce a satisfactory result. Experimental studies on grafting are summarised by F. K. SANDERS; and SEDDON describes his considerable experience with this tech-

18. Peripheral Nerve Injuries. Edited by H. J. SEDDON. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 282. H.M. Stationery Office. 1954. Pp. 451. 55*s*.

19. Aids to the Investigation of Peripheral Nerve Injuries. M.R.C. War Memorandum No. 7. H.M. Stationery Office, 1942.

nique at Oxford. The criterion of success in grafting is recovery as good as that by direct repair of a small gap in the same nerve at the same site. The most striking successes have been with the median-nerve grafts, using either several strands of a cutaneous nerve or a portion of a main trunk—e.g., the proximal stump of an irreparable ulnar nerve. Successful results in almost half the cases of nerve-grafting is a considerable achievement, and SEDDON's account of this work is a fitting conclusion to this comprehensive review of British experience in the treatment of peripheral-nerve injuries in war-time.

Raynaud's Phenomenon in Industry

UNDER the Industrial Injuries Act benefit is provided for injuries caused by accident arising out of and in the course of employment and for certain diseases due to the nature of employment. Such diseases are prescribed in regulations and are accordingly known as "prescribed diseases." In 1946 the Court of Appeal awarded compensation to a workman who claimed to have developed Raynaud's phenomenon through the use of a high-frequency vibratory tool. In further cases, heard in the Court of Appeal and the House of Lords, the 1946 decision was not wholly sustained; and in 1949 a tribunal consisting of the Industrial Injuries Commissioner and two deputy commissioners decided that the incapacity due to Raynaud's phenomenon was not allowable under the Industrial Injuries Act. At this stage the Minister of Pensions and National Insurance asked the Industrial Injuries Advisory Council to consider whether Raynaud's phenomenon should be brought within the Act by being added to the list of prescribed diseases—it is already treated as a prescribed disease in several other countries. The inquiry, undertaken by the industrial diseases subcommittee, in the words of the majority report [1] "has been a difficult and protracted one."

Any investigation into Raynaud's phenomenon arising from long-continued use of a vibratory tool is greatly handicapped by the lack of data concerning its incidence in various industrial procedures. Workers who already have "dead fingers" may be loth to bring it to the doctor's attention, for fear of transfer to a less well-paid job; and from the other side the managerial staff do not actively invite complaints. The phenomenon has been described in association with many procedures involving vibratory tools—flex-driven polishing, pneumatic drilling, shoe-pounding, light riveting hammers, and hand-grinding. AGATE and DRUETT,[2] using a piezo-crystal recording technique, suggested that the critical frequency range was 40–125 cycles per second. Many other variables may be of equal or greater importance, including, for instance, amplitude and wave-form of fundamental and secondary harmonics, strength of grip used, type of material on which the work is done, the operator's skill, the mechanical efficiency and mass of the tool, and the operator's susceptibility to the condition. Susceptibility varies greatly: whereas one worker will complain of Raynaud's phenomenon within months, another under identical conditions may never be troubled. A further difficulty is in diagnosis. Raynaud's phenomenon due to vibratory tools is unassociated with objective signs other than the colour changes in an attack, and often these are not easily precipitated under laboratory conditions. Even if the presence of Raynaud's phenomenon is confirmed, how can its association with an industrial process be evaluated? It has long been recognised that white fingers may develop in a wide range of vascular and systemic diseases, and correct diagnosis may depend not only on detailed clinical and laboratory investigation but also on patient follow-up. Nevertheless clinicians agree that in the vast majority of cases Raynaud's phenomenon due to a vibratory tool can be diagnosed with reasonable confidence, though the severity of the lesion and the incapacity are more difficult to assess. The conclusion of the majority report is that Raynaud's phenomenon rarely interferes greatly with the patient's work. But it may affect his leisure hours; for gardening, swimming, and other outdoor activities may be impossible for him, and, once established, symptoms do not appreciably abate even though the patient abstains from the employment which has given rise to the disorder. Having considered all these factors, the majority of the subcommittee concluded that any form of prescription of Raynaud's phenomenon would give rise to serious and probably insurmountable practical difficulties, especially in deciding individual claims; and they advise therefore against its prescription. In contrast the minority report, which recommends that Raynaud's phenomenon should be a prescribed disease, points out that everyone agrees that this condition occurs in industry, and this being so it is the Minister's responsibility to see that competent doctors are made available for diagnosis, as with other prescribed diseases.

The situation therefore is still unhappy. Possibly a more satisfactory outcome would follow further investigation into the incidence of Raynaud's phenomenon with various industrial procedures involving vibratory tools, and the substitution where possible of innocent techniques for those incriminated. Such a solution may not be universally feasible, but it could certainly eliminate most of the more harmful occupations.

1. Raynaud's phenomenon. Report of the Industrial Injuries Advisory Council. Cmd. 9347. H.M. Stationery Office. 1954. Pp. 16. 6d.
2. Agate, J. N., Druett, H. A. *Brit. J. industr. Med.* 1947, **4**, 141.

Heroic Days

> "In the natural sciences these are, and have been, and are most surely likely to continue to be, heroic days. Discovery follows discovery, each both raising and answering questions, each ending a long search, and each providing the new instrument for new search."

NO-ONE, perhaps, has a better right to speak of the wonder and terror of our times than J. ROBERT OPPENHEIMER, director of the Institute for Advanced Study at Princeton University, formerly a most distinguished adviser of the American government on atomic policy, and now (since the investigation of his character and associations by the Atomic Energy Commission last June) denied all further access to that policy. He was speaking, at the celebrations of the 200th anniversary of the founding of Columbia University, on the theme chosen for that occasion: "Man's right to knowledge and the free use thereof." ALISTAIR COOK, in quoting parts of his address in

the *Manchester Guardian* of Dec. 29, says that OPPENHEIMER narrowed it for his own purposes to "the prospect in the arts and sciences"; and within this framework demonstrated a world upheaved. A distant survey of the human scene shows what passes for progress:

"that more people are engaged in scientific research than ever before, that the Soviet world and the free world are running neck and neck in the training of scientists . . . that the social sciences are pursued actively in America, Scandinavia and England, that there are more people who hear the great music of the past, and more music is composed and more paintings are painted. . . ."

But, with more means of communication than ever before, we can speak to each other less. The artist, who depends on a common sensibility and culture, on a common meaning of symbols, on a community of experience and common ways of describing and interpreting it, finds himself speaking to air. "His audience must be man: it must be man, and not a specialised set of experts among his fellows"; but the familiar concept of man is dislimning and his common cultural inheritance is shredding away. For, though the songs and stories of one half of the world are being sung and told in the other half, the highways—"the super highways"—which carry them leap over the village footpaths and the small roads that join one small community with another. They are the means by which we are reminded of famine or war in remote places, but "they are also the means by which the true human community, the man knowing man, the neighbour understanding neighbour, the schoolboy learning a poem, the women dancing, the individual curiosity, the individual beauty, are being blown dry and useless. The means by which the passivity of the disengaged spectator presents to the man of art and science the bleak face of inhumanity."

Like the artist, the scientist is separated from his fellows—"by long years of study, specialised vocabularies, arts, techniques, and knowledge, from the common heritage even of a most civilised society, and anyone working at the frontier of such science is in that sense a very long way from home. . . ." He is far, too, from the practical crafts in which his techniques, like the artist's, have their origins.

In our somersaulting world we are stunned by the new things showering round us, all potentially good, some potentially dangerous beyond all former imagining.

"What is new," OPPENHEIMER said, "is that in one generation our knowledge of the natural world engulfs, upsets, and complements all knowledge of the natural world before. The techniques, among which and by which we live, multiply and ramify, so that the whole world is bound together by communication, blocked here and there by the immense synopses of political tyranny. The global quality of the world is new: our knowledge and sympathy with remote and diverse peoples, our involvement with them in practical terms, and our commitment to them in terms of brotherhood. What is new in the world is the massive character of its dissolution and corruption of authority, in belief, in ritual, and in temporal order. Yet this is the world we have come to live in. The very difficulties which it presents derive from growth in understanding, in skill, in power. To assail the changes that have unmoored us from the past is futile and in a deep sense I think it is wicked. We need to recognise the change and learn what resources we have."

What resources have we? He had an answer, an old sound one.

"We shall have a rugged time of it to keep our minds open and keep them deep, to keep our sense of beauty, and our ability to make it, and our occasional ability to see it, in places remote and strange and unfamiliar; we shall have a rugged time of it, all of us, in keeping these gardens in our villages, in keeping open the manifold, intricate, casual paths, to keep these flourishing in a great open windy world; but this is, as I see it, the condition of man; and in this condition we can help, because we can love one another."

This is, and always has been, practical advice, if hard to follow; and it does not come newly even from OPPENHEIMER, for he gave it last year, in his sixth Reith lecture,[1] perhaps with a less heavy heart.

"As for ourselves in these times of change," he said then, "of ever increasing knowledge, of collective power and individual impotence, of heroism and of drudgery, of progress and of tragedy, we too are brothers."

He spoke too of the noble and spacious mansions of science:

"We go in and out; even the most assiduous of us is not bound to this vast structure. One thing we find throughout the house: there are no locks; there are no shut doors; wherever we go there are the signs and usually the words of welcome. It is an open house, open to all comers."

Is it still open? And how should it be kept open? He himself paid tribute to the universities, as communities in which artists, musicians, poets, and scientists gather in fruitful companionship and engage in the great task of teaching. Here, if anywhere, most doors in the house of science are unlocked. They are not unlocked everywhere, however, and it is well that we should keep this in mind; for there is a point at which the passivity of the disengaged spectator cannot be distinguished from the passivity of the rabbit dazed by advancing headlights. BERTRAND RUSSELL,[2] in an unforgettable broadcast, has shown our peril plainly—not as members of this or that country or supporters of this or that form of government, but as humankind.

One question in particular needs a quick and careful answer: if science discovers secrets so potentially dangerous that they cannot safely be confided to humanity at large, to whom can they safely be confided? To politicians? To select committees—selected on other grounds, probably, than their preoccupation with the good, the true, and the beautiful? Today we cannot act upon, and can barely discuss, "man's right to knowledge and the free use thereof": a concept perhaps worth dying for. The meaner doctrine—"man's right to secrets and the exclusive use thereof"—has triumphed in our heroic days; and is fast creating a world fit for heroes, but only heroes, to live in. Does the nobler concept carry greater risks?

Coloured Food

AT present, with a few specified exceptions any colouring matter may be added to food. The Food Standards Committee has now recommended[3] that the Public Health (Preservatives, &c., in Food) Regulations, 1925–53, should be amended so as to permit the use in foods of specified colours only. Representations on the committee's recommendations may be submitted up till March 31 to the joint secretary of the Preservatives Subcommittee, Ministry of Food, Great Westminster House, Horseferry Road, London, S.W.1.

1. *Listener*, 1953, **50**, 1075.
2. *Ibid.*, 1954, **52** 1135.
3. Food Standards Committee: Report on Colouring Matters. H.M. Stationery Office. Pp. 27. 1s.

Annotations

OUTLOOK FOR THE AMPUTEE

In 1950 the Ministry of Pensions set up a medical committee, with Sir Ernest Rock Carling as chairman, to consider whether amputation of a limb, and subsequent wearing of a prosthesis, can initiate or aggravate cardiovascular disorder, and whether such amputation reduces the expectation of life. These questions proved unexpectedly hard to answer. An interim report, published in 1951, was somewhat inconclusive, and the majority report [1] in 1953 brought in a new factor by suggesting that men who have suffered major sepsis—with or without amputation—have a higher late incidence of cardiovascular disease and an earlier average age of death. In the hope of putting its findings on a firmer foundation the committee then arranged with the Ministry for the medical examination of some 5500 pensioners, of whom 4500 were to be amputees and 1000 were to be controls. Unfortunately so many of this sample failed to attend that no firm conclusions could be drawn.

Nevertheless, having reviewed the whole of the evidence at its disposal, the committee has now been able to reach some "ultimate conclusions" which seem fairly clear. On the question of expectation of life it says that, starting, for example, with 100 amputees alive in 1930, 25 had died by 1950, compared with 23 of the general population of comparable age and sex. Of 100 wounded pensioners alive in 1930, 26 had died by 1950 compared with 24 of the corresponding general population. Both for the amputees and for the wounded pensioners, the mean annual mortality-rate was just over 1 per 1000 in excess of that of other people. On this the committee comments:

"With so small a difference of total mortality the actual distribution among the certified causes of death assumes very little importance. Some members of the committee think that within the limitations of the statistical material available there is evidence of some slight excess of cardiovascular disease as compared with the normal population, with a consequential deficiency of deaths from other causes. The committee as a whole, however, are still of the opinion indicated in the Interim Report that cardiovascular diseases have not been experienced more frequently to an extent of any significance amongst the causes of death in limb amputees as compared with those with serious leg wounds without amputation.

"Some amputees, especially those with a high thigh amputation, necessitating a tilting-table, with excessive obesity or with severe stump pain find the wearing of a prosthesis an increasing burden as age advances. These may deserve individual reconsideration though other classes of pensioner will also find their disabilities more burdensome with the passage of time. Neither as regards their mortality nor their morbidity do amputees form a class apart. They have neither a higher mortality rate nor a higher cardiovascular rate than other classes of seriously wounded."

Having reconsidered the evidence on sepsis as a factor the committee feels that the importance of this was overemphasised in its last report. It concludes with the following answers to the questions put to it:

"Limb amputations, and the subsequent wearing of a prosthesis do not, in time, produce effects on the body as a whole which may initiate, or aggravate, cardiovascular disorders to any significant extent. There is no material difference between the mortality rates of amputees, by reason of amputation, and that of the corresponding rates for pensioners who have suffered wounds not leading to amputation. Such excess as there is in both classes over that in the general population is quite small." [2]

1. See *Lancet*, 1953, i, 633.
2. These conclusions are contained in a letter to the Chief Medical Officer of the Ministry of Pensions and National Insurance, signed by the whole committee—namely, Sir Ernest Rock Carling, Dr. A. Greig Anderson, Prof. G. R. Cameron, F.R.S., Dr. T. F. Cotton, Prof. J. L. D'Silva, Dr. A. Hope Gosse, Prof. K. J. Franklin, Dr. W. Ernest Lloyd, Dr. W. P. D. Logan, and Dr. E. Livingstone (secretary).

APICAL LOCALISATION OF PULMONARY TUBERCULOSIS

As we recently noted,[1] experimental evidence supports the hypothesis that the apical localisation of pulmonary tuberculosis is the outcome of relative anæmia due to the erect posture. Dock [2] noted that the pulmonary-arterial pressure was too low, in comparison with the force of gravity, to maintain flow in the upper third of the lungs of adults who were sitting or standing. Thus few antibodies and macrophages were brought to the apex; toxins were no longer diluted and removed; and the resulting changes in gas tension, by which O_2 tension is raised and CO_2 tension reduced, were believed to favour growth of the tubercle bacilli in this region. Dock [3] has now reviewed more recent work, which confirms the earlier findings with regard to the inadequate pulmonary-arterial pressure in the erect posture, the changes in gas tension in the apical and lateral parts of the lungs with changes in posture, and some of the effects of growing tubercle bacilli in altered concentrations of O_2 and CO_2 as found in systemic and pulmonic arterial bloods. He also cites the observations of Scott et al.[4] These workers anastomosed in monkeys a pulmonary or a lobar artery to a systemic artery, or ligated a pulmonary artery or one of its branches (thereby also making the blood-supply systemic via the bronchial arteries), and showed that the lung or part of lung receiving systemic blood developed tuberculous processes more severely than the rest of the lung receiving pulmonic blood, whether the tubercle bacilli were injected preoperatively (to give equal seeding all over) or postoperatively (thus giving heavier or earlier seeding to the pulmonic supply), whether inoculated with larger or smaller doses of bacilli, or whether inoculated intravenously or subcutaneously: in other words, the higher O_2 tension in the systemic arterial blood was the chief factor in causing larger lesions, and changes in lymph flow were unimportant. Dock states: "Scott's experiments force one to accept the conclusion that only levels of gas tension are involved in protecting the base or in favouring tuberculosis at the apex." This statement seems to take Scott's experiments rather out of their context. Scott and his co-workers were giving the monkeys a primary infection with tuberculosis. Dock is applying their results to explain the site of "reinfection" tuberculosis (autogenous or exogenous)—surely a very different and much more complicated problem.

The present view [5] is that resistance of the body to invasion by tubercle bacilli resides in the mononuclear cells that accumulate around the bacilli, assisted by unknown humoral factors. Florey also points out [6] the difference between the reaction in an animal not previously infected and one previously infected or vaccinated; and the earliest changes in animals are essentially the same as those in man. In a previously uninfected animal, during the first few days after inhalation of a few bacilli the organisms are taken up by mononuclear cells in the alveolar walls and multiply rapidly intracellularly without any surrounding cell reaction; after eight days the cell reaction begins, and this proceeds to necrosis. During these first six to eight days the bacilli are known to spread along the lymphatics. In a previously infected animal, on the other hand, a very active cell reaction starts in the first few days, and the bacilli apparently remain unchanged in the mononuclear cells; they are fixed to the site and do not spread along the lymphatics early. In the human lung primary infection

1. *Lancet*, 1954, ii, 1059.
2. Dock, W. *Amer. Rev. Tuberc.* 1946, **34**, 456.
3. Dock, W. *Arch. intern. Med.* 1954, **94**, 700.
4. Scott, H. W. jun., Hanlon, C. R., Olson, B. J. *J. thorac. Surg.* 1950, **20**, 761. Hanlon, C. R., Scott, H. W. jun., Olson, B. J. *Surgery*, 1950, **28**, 209. Olson, B. J., Scott, H. W. jun., Hanlon, C. R., Mattern, C. F. T. *Amer. Rev. Tuberc.* 1952, **65**, 48.
5. Florey, H. W. Lectures on General Pathology, London, 1954; p. 661.
6. *Ibid*, p. 631.

may occur at any site, if the infecting dose overcomes the natural resistance. In people with acquired resistance, the factors responsible for this resistance cannot, owing to the erect posture, be brought so easily and in sufficient quantity to the upper thirds of the lungs (especially on the right side, because of the obtuse angle and longer branches of the right pulmonary artery); and because of the differences in gaseous tension bacilli grow most rapidly in the apical regions, and thus most lesions occur at the apex. That the circulatory factor does not affect only the gaseous tension is also suggested by the collection of siliceous dust, and the resultant scars, at the apices,[7] where the particles in the macrophages stagnate, though elsewhere they are removed by the bronchi and lymphatic channels. This difference cannot be due to differences in gaseous tension.

It seems unreasonable at present to regard one factor as solely responsible for the localisation of tuberculous lesions in the upper third of the lungs. While Scott's experiments show the undoubted importance of differences in gas tensions in influencing the growth of tubercle bacilli, the factors involved in the host's resistance cannot be ignored. Scott's experiments give no support to Smith's "stream-flow" hypothesis.[1 8]

SUSCEPTIBILITY OF MENINGOCOCCI

THE change in the susceptibility of many strains of pathogenic staphylococci to penicillin (and in some cases to the antibiotics administered by mouth), and the emergence in the late war of sulphonamide-resistant hæmolytic streptococci and gonococci, point to the need for periodic re-evaluation of the chemotherapy of infections. Surprisingly, in meningococcal meningitis sulphadiazine has remained the drug of choice for upwards of fifteen years. During the war-time epidemics in the U.S.A. the sensitivity of meningococci to sulphadiazine decreased very little,[9] and this decrease has never been shown to have materially affected the clinical response to the drug.

Love and Finland[10] have tested the in-vitro sensitivity of 50 recently isolated strains of meningococci to eleven antibiotics and to sulphadiazine. Weight for weight, penicillin was by far the most active agent and erythromycin ranked next, while polymyxin B and bacitracin were the least active. Sulphadiazine, chloramphenicol, aureomycin, oxytetracycline, tetracycline, streptomycin, neomycin, and carbomycin had intermediate activity. The strains varied within a narrow range in their sensitivity to each of the antibiotics, but their susceptibility to sulphadiazine varied over a wide range. Of the 50 strains, 6 were moderately resistant to sulphadiazine according to the in-vitro test used, but the remainder were completely inhibited by 50 μg. per ml. (5 mg. per 100 ml.) or less—which is well below the highest level of sulphonamide that can readily be maintained in the blood and cerebrospinal fluid of patients. Even the 6 rather more refractory strains might have been inhibited by the dosage of sulphonamide used in Great Britain for severe infections.[11] Comparison with the sensitivities of strains isolated and tested in or before 1945 gave no evidence of increasing resistance of meningococci to penicillin.

It would seem from these results that sulphadiazine should still be the drug of choice in meningococcal meningitis, but that in the exceptional case where the clinical response seems to be delayed sulphadiazine might usefully be supplemented by chloramphenicol orally (since it penetrates well into the cerebrospinal fluid) or by penicillin intramuscularly and intrathecally.

7. Davson, J., Susman, W. *J. Path. Bact.* 1937, **45**, 597. Davson, J. *Ibid*, 1939, **49**, 483.
8. Smith, D. T., Abernethy, R. S., Smith, G. B. jun., Bondurant, S. *Amer. Rev. Tubere.* 1954, **70**, 547.
9. Schoenbach, E. B., Phair, J. J. *Amer. J. Hyg.* 1948, **47**, 177.
10. Love, B. D. jun., Finland, M. *Amer. J. med. Sci.* 1954, **228**, 534.
11. Banks, H. S. *Lancet*, 1941, i, 104. M.R.C. War Memorandum No. 10. H.M. Stationery Office, 1943.

ELECTROLYTE DEPLETION IN PYLORIC STENOSIS

JUST as the hope of a universal *therapia magna sterilisans*, aroused by the discovery of antibiotics, has been dimmed by the emergence of bacterial resistance and drug-sensitivity reactions, so the quest for "a few simple rules" in treating electrolyte disorders seems doomed to failure because of the complexity of the disturbances. Commonly further disturbance is created by treatment directed at a single biochemical abnormality. The use of ammonium chloride to reduce a raised alkali reserve[1] may be a case in point; for such treatment would aggravate any concurrent depletion of base, and water intoxication has in fact been observed in infants with pyloric stenosis treated in this way.[2] There may even be fallacies in arguing from the composition of the fluid lost from the body to the likely electrolyte disorder; for the homœostatic mechanisms for one ion may be more efficient than for another, so that the final result will not be a simple subtraction of the fluid lost from a "normal" body-fluid, but will be modified by changes in renal excretion of ions, and possibly by transfers of ions between cells and extracellular fluid.

Black and Jepson,[3] in balance studies on pyloric stenosis in adults, have defined the varied patterns of electrolyte depletion that may be found in different patients; and they suggest that the raised alkali reserve commonly found in patients with this condition may not be simply explained in terms of alkalosis consequent on loss of chloride in the vomited material. During recovery five patients with pyloric stenosis retained amounts of sodium, chloride, and potassium considerably greater than the amounts retained by patients who had undergone partial gastrectomy for peptic ulcer uncomplicated by stenosis. The retention of base (sodium + potassium) was greater than that of chloride, suggesting that the original depletion had been of base even more than of chloride. The patients varied considerably in the proportion of sodium to potassium in the retained base, some having been dehydrated and others retaining more potassium than sodium. In seeking to account for the disappearance of "alkalosis" observed on a régime which actually provided more base than chloride, Black and Jepson postulate that the alkalosis demonstrable in extracellular fluid was matched by an even greater intracellular-fluid acidosis. Evidence of this feature in association with potassium depletion has been found experimentally both in animals[4] and in man.[5] Further studies by Darrow's group[6] demonstrate that rats given a high intake of bicarbonate will have an increased serum-bicarbonate level only when their potassium intake is severely restricted; and that the "alkalosis" then induced can be corrected by potassium bicarbonate.

These observations tend to emphasise depletion of potassium rather than of chloride as the cause of extracellular alkalosis in patients with pyloric stenosis. Potassium depletion has also been demonstrated in pyloric stenosis by the finding of low serum levels,[7] by muscle biopsy,[8] and by an observed increase in exchangeable potassium during recovery.[9] Black and Jepson suggest that administration of saline, which accentuates potassium loss, should be reserved for patients who are clinically dehydrated. Potassium salts should be given by mouth, and there is some evidence that these may be absorbed even before the obstruction has been relieved by operation. These workers condemn ammonium

1. Bodansky, O. *Amer. J. med. Sci.* 1949, **218**, 567.
2. Doxiadis, S. A., Goldfinch, M. K., Holt, K. S. *Lancet*, 1953, ii, 801.
3. Black, D. A. K., Jepson, R. P. *Quart. J. Med.* 1954, **23**, 367.
4. Cooke, R. E., Segar, W. E., Cheek, D. B., Coville, F. E., Darrow, D. C. *J. clin. Invest.* 1952, **31**, 798.
5. Black, D. A. K., Milne, M. D. *Clin. Sci.* 1952, **11**, 397.
6. Cooke, R. E., Segar, W. E., Reed, C., Etzwiler, D. D., Vita, M., Brusilow, S., Darrow, D. C. *Amer. J. Med.* 1954, **17**, 180.
7. Lans, H. S., Stein, I. F., Meyer, K. A. *Ann. Surg.* 1952, **135**, 441.
8. Mudge, G. H., Vislocky, K. *J. clin. Invest.* 1949, **28**, 482.
9. Moore, F. D., Edelman, I. S., Olney, J. M., James, A. H., Brooks, L., Wilson, G. M. *Metabolism*, 1954, **3**, 334.

chloride in view of the absence of any chloride deficit not "covered" by an equal or greater deficit of base. In addition to the risk of water intoxication, ammonium chloride given in these circumstances might be expected to lead to further loss of base from the body, and to aggravate the intracellular acidosis.

VISCERAL EPILEPSY

RECENT work on the electrical activity of the brain has strengthened the clinical impression of over fifty years' standing that paroxysmal visceral disturbance may sometimes be epileptic. The syndrome is of interest for several reasons. First it is a problem in differential diagnosis; and if it is not recognised, needless alarm and abdominal operations may ensue. Secondly, the clinical picture is contributing to our knowledge of visceral representation in the cortex: the association of visceral epilepsy with a local cerebral lesion or a focus of abnormal electrical discharge has shown that the medial aspect of the temporal lobe is involved in visceral activity and sensation. Finally such cases display the linkage between epilepsy and migraine; for the paroxysmal visceral disturbance of cyclical vomiting, which is widely recognised as a prelude to migraine in adult life, is very occasionally associated also with later epileptic attacks, with or without migraine. Dr. Wallis elsewhere in this issue describes some cases of the condition. His descriptive term "masked epilepsy" is perhaps unfortunate, since it harks back to a time when both the clinical and the electro-encephalographic pictures of visceral epilepsy were less well defined. Nevertheless, his cases illustrate well the clinical setting and the diagnostic pitfalls. Usually the disorder first shows itself in childhood, and anticonvulsant drugs are valuable both in diagnosis and in treatment.

DIAGNOSIS OF PERICARDIAL EFFUSION

Besterman and Thomas [1] have emphasised the value of a rapidly enlarging heart shadow on successive radiographs in the diagnosis of pericardial effusion; but this sign is present only before all the fluid has formed, and then the diagnosis may be more difficult. Williams and Soutter [2] have reviewed a series of 17 cases, all with cardiac tamponade, and found that in 11 of these the diagnosis was missed by at least one physician at the first examination. Symptoms were of little help, for the commonest—dyspnœa—suggested heart-failure or pulmonary disease, and cough was not a constant feature. Pain was present in half the cases, and only when this was substernal and worse on respiration did it seem likely to suggest the underlying condition. Misconceptions about the signs in cardiac tamponade were responsible for the diagnosis being missed or rejected. For example, often the apex-beat was regarded as too easily felt, or the heart sounds were thought to be too audible, for any significant amount of fluid to be present; while prominent ventricular pulsations on fluoroscopy, and lack of variation of the heart-shadow with position, wrongly influenced other examiners. A large effusion may produce all the well-known signs, but it does not invariably do so; and the classical "quiet heart" may be disconcertingly loud and obvious. These misconceptions were usually based on faulty textbook statements, or "clinical lore" handed on by teachers without verification; but occasionally the physician was led astray by his own "common-sense," but incorrect, deductions. Two signs were often missed: a rising venous pressure and pulsus paradoxus. Increasing venous pressure was missed usually because the physician expected grossly distended neck veins in the upright position; Williams and Soutter never found these, but they did find evidence of venous pulsation at the root of the neck in every patient but one. They regard this as an important sign of raised venous pressure. The paradoxical pulse, although traditionally associated with tamponade, can occur in healthy people, and be absent in those with an effusion. It is best detected by careful measurement of the systolic blood-pressure; a drop of 10 mm. Hg or more during inspiration suggests its presence, but this sign must be distinguished from the pulse alternation found sometimes in left ventricular failure.

Although pericardial effusion causing tamponade is common, early diagnosis is important, because treatment may be life-saving and the diagnosis becomes increasingly difficult as the condition worsens with falling cardiac output and collapse. Hæmopericardium should be borne in mind as a cause of tamponade: it has been described [3] as a complication of anticoagulant therapy for myocardial infarction, and so may become commoner. Here early diagnosis is especially important.

1. Besterman, E. M. M., Thomas, G. T. *Brit. Heart J.* 1953, **15**, 113.
2. Williams, C., Soutter, L. *Arch. intern. Med.* 1954, **94**, 571.

ENDOGENOUS VITAMIN-B_1 DEFICIENCY

IT is generally — and justifiably — accepted that Wernicke's encephalopathy is the result of aneurine (thiamine) deficiency. In the great majority of cases [4] there is clinical evidence of lack of vitamin B_1. Experimental deficiency in the rat [5] and pigeon [6] and thiaminase-induced deficiency in farm foxes [7] produce typical cerebral lesions. In Japanese prisoner-of-war camps [8 9] where the diet was deficient in aneurine the condition appeared like an epidemic. Artificial aneurine-free diets produce appropriate symptoms in volunteers,[10] and prevent recovery of alcoholics otherwise adequately treated.[11] The lesions of the disease have been well described,[12] and are highly distinctive. Oddly enough, the only aspect that is not fully agreed on is the clinical picture. But so many of the cases seen under ordinary circumstances are complicated by other conditions producing cerebral symptoms of their own that this is not surprising. The picture of alcoholic aneurine deficiency is particularly confusing, and the status of Korsakow's syndrome in particular needs clarification. The simultaneous presence of other vitamin deficiencies also commonly complicates the picture. But the careful studies of Phillips et al.[11] have established that the cases in prisoners-of-war, described by de Wardener and Lennox,[8] represent the clearest-cut examples of pure cerebral aneurine deficiency yet reported.

Against this more or less clear background Feigin and Wolf [13] claim to have found the lesions of Wernicke's encephalopathy in children with no vitamin deficiency. These children were aged 2–4 years, and presented a fairly distinctive clinical picture of a chronic disease with inadequate growth, mental defect, ataxia, and eye signs. All appeared to have had adequate diets, and at least one had been treated with large doses of aneurine. All died, and necropsy showed extensive lesions indistinguishable from those of classical Wernicke's encephalopathy in type and distribution (it is surprising to find the mammillary bodies unaffected in all three, but they are by no means always involved). It is easy to criticise this work. The number of proved cases of cerebral aneurine deficiency that have been examined at necropsy is too few for the comparison of the histological changes to be wholly reliable. No biochemical studies—not even pyruvic-acid levels—are recorded.

3. Goldstein, R., Wolff, L. *J. Amer. med. Ass.* 1951, **146**, 616.
4. Spillane, J. D. Nutritional Disorders of the Nervous System. Edinburgh, 1947.
5. Prickett, C. O. *Amer. J. Physiol.* 1934, **107**, 459.
6. Alexander, L. *Amer. J. Path.* 1940, **16**, 61.
7. Green, R. G., Carlson, W. E., Evans, C. A. *J. Nutrit.* 1941, **21**, 243. Sealcook, R. R., Godland, R. L. *J. Amer. chem. Soc.* 1944, **66**, 507.
8. de Wardener, H. E., Lennox, B. *Lancet*, 1947, i, 11.
9. Cruikshank, E. K. *Quart. J. Med.* 1950, **19**, 327.
10. Williams, R. D., Wilder, R. M., Smith, B. F. *Arch. intern. Med.* 1940, **66**, 785.
11. Phillips, G. B., Victor, M., Adams, R. D., Davidson, C. S. *J. clin. Invest.* 1952, **31**, 859.
12. Campbell, A. C. P., Biggart, J. H. *J. Path. Bact.* 1939, **48**, 245.
13. Feigin, I., Wolf, A. *J. Pediat.* 1954, **45**, 243.

But the cases are carefully presented and soberly discussed, and the authors' views deserve consideration. They think it most probable that in these cases there was a congenital defect in the metabolic utilisation of aneurine—possibly a failure of phosphorylation to co-carboxylase. This view is slightly supported by the fact that two of their cases were sibs and the offspring of a consanguineous marriage.

"Dysvitaminoses," among which this syndrome would be included, are in bad odour: for instance, Flesch [14] has effectively disposed of so-called local vitamin-A deficiency in the skin. But this should not lead us to prejudge this latest candidate.

DISLOCATION OF THE EYEBALL

EXTREME proptosis occurs when the equator of the eyeball passes in front of the plane of action of the sphincter-like orbicularis oculi muscle and the eyelids close behind the globe. There are several causal factors. One is trauma, and others are laxity of the eyelids and shallowness of the orbits. In obesity with protruding eyes the trauma may be quite trivial, as in a case, recently reported, where separation of the eyelids to instil drops caused the dislocation.[15] Negroes tend to have shallow orbits and so are prone to this mishap, and Lyle and McGavic [16] have recorded the case of a Negro with additional oblique muscles which, acting as protractors, allowed voluntary dislocation of the eyes. Similarly, babies have shallow orbits and the eye may be luxated by injury at birth, or in a fit of crying, when the cause may be congestion of the orbital veins, especially if the baby has been held head downwards to terminate a choking fit.

Dislocation of the eyeball usually causes blepharospasm, and the patient complains of nausea and a dull aching pain in the eye. Replacement is effected by gentle and constant traction on the eyelashes with firm counter-pressure on the globe; it may be necessary to use a surface anæsthetic and to inject the facial nerve. Rarely, lateral canthotomy may be needed. Where the optic nerve and the extra-ocular muscles have not been injured the patient is usually none the worse for his experience.

PELVIC CONGESTION

FOR some years H. C. Taylor, of Columbia University, has been applying to gynæcology the concepts of psychosomatic medicine. He now describes [17] 100 cases which fall into the "more-or-less well defined clinical entity" which he calls pelvic congestion. The entity is well defined mainly by reason of the multiplicity of the symptoms: 20 complaints are listed, of which 11 are chief complaints. The table begins with low abdominal pain, low-back pain, and secondary dysmenorrhœa; and the only constant physical sign is tenderness on pelvic examination. But, while most gynæcologists will readily accept the existence of the group of patients whom Taylor describes, and may term them "functional," many may find difficulty in recognising the findings which he says are typical at laparotomy: "the uterus is softened, slightly enlarged and purplish or mottled in appearance. The cul-de-sac contains an increased amount of amber-coloured fluid and there is recognisable œdema of the subserosal connective tissue and sometimes of the ovary." Surely many would regard such findings as normal. Of his 100 cases, only 17 had a laparotomy during the investigation (though 47 had had a laparotomy elsewhere—as might be expected in such a group). Therefore in less than half his cases was endometriosis excluded. Throughout Taylor's writings there is almost no reference to this condition, which would be strongly suspected by many clinicians on the symptoms and signs he describes. In his latest paper the word endometriosis does not appear at all; and this omission is especially strange since Meigs,[18] Scott and Te Linde,[19] and many others have emphasised that endometriosis is very common and seemingly on the increase.

Taylor outlines a tentative programme of therapy, which includes "reassurance," the treatment of retroversion and cervical erosions when present, advocacy of childbirth (which temporarily alleviates symptoms), and finally surgery in which a choice has to be made between resection of cystic ovaries and hysterectomy. Before operation is undertaken a psychiatric consultation is arranged. Theobald [20] has claimed better results from "cauterisation of the uterus plus" (following the lead of Young [21] who reported benefit from cauterisation of the cervix). He has extended the scope of the tissue-destruction by introducing a silver-nitrate stick into the cavity of the uterus. At the same time he gives dienœstrol 15 mg. daily for six weeks and pessaries containing "a pure active culture of the Metchnikoff Bulgarian Bacillus."

If pelvic congestion and pelvic endometriosis are clinically so very similar, it seems reasonable to ask whether congestion, if long continued, may lead in susceptible persons to endometriosis—the modern scourge of women in the childbearing years.

NEW YEAR HONOURS

IN the past two or three years relatively few senior honours have been bestowed on members of our profession in this country, and it is pleasant to see so many notable medical names in the New Year list. Professor Adrian's beautiful mind and public service have already won him all the most coveted scientific distinctions, but it is entirely proper that a peerage should now make him a member of a body whose primary function is perception and where his experience will be valued. Sir John Stopford, who becomes K.B.E., is likewise an experimental neurologist who has brought his lucidity into administration, and his contribution to the development of medical schools and hospitals has been hardly less important than his work as vice-chancellor of Manchester University for the past twenty years. Of the new knights two hold chairs at Oxford. Professor Le Gros Clark, though known most widely as an authority on the primates, is an anatomist who has maintained his stimulating contact with medicine, both by neurological researches and through his lively school. Professor Macintosh's appointment in 1937 to the first Nuffield chair of anæsthetics drew attention to the new importance of this specialty; and through his pupils, his writings, and his work in the Royal Air Force during the war he has had no small share in the remarkable development of techniques in which British anæsthetists have taken a lead. At Aberdeen and since 1938 at Edinburgh Professor Davidson has combined special knowledge of blood disorders with a broad outlook on medicine: he is physician to the Queen in Scotland, and his knighthood coincides fitly with his presidency of the Royal College of Physicians of Edinburgh. We are likewise happy to see among the new knights the name of Mr. A. A. Gemmell, of Liverpool, whose sterling work for the Royal College of Obstetricians and Gynæcologists, both as president and previously, has well deserved recognition. Another medical president whose knighthood we are glad to note is Dr. Collins, president of the British Medical Association in Australia.

To all these, and to our other colleagues named on p. 95, we offer warm congratulations.

14. Flesch, P. *J. invest. Derm.* 1952, **19**, 353.
15. Offenbach, B. *New Engl. J. Med.* 1954, **251**, 338.
16. Lyle, D. J., McGavic, J. S. *Amer. J. Ophthal.* 1936, **19**, 316.
17. Taylor, H. C. *Amer. J. Obstet. Gynec.* 1954, **67**, 1177.
18. Meigs, J. V. *Ann. Surg.* 1941, **114**, 866.
19. Scott, R. B., Te Linde, R. W. *Ibid*, 1950, **131**, 697.
20. Theobald, G. W. *J. Obstet. Gynæc., Brit. Emp.* 1951, **58**, 733.
21. Young, J. *Brit. med. J.* 1938, i, 105.

Public Health

AN ALTERNATIVE TO HEALTH CENTRES

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FOR a time after the National Health Service Act came into operation health centres were held to be the most hopeful means of fusing the public-health and general medical services. Today enthusiasm for health centres has waned. In practice it has proved difficult to find suitable sites or premises; and even when they have been built and equipped the expense of staffing and maintaining them would probably be out of proportion to their value. A large proportion of the cost would have to be borne by rates or taxes as general practioners could hardly be expected to contribute more than the saving in practice expenses.

If we are unlikely to have many health centres in the near future we must look for other means of linking the domiciliary, preventive, and curative services. A possible solution to part of the problem, which might be to the advantage of the profession and public alike, would be for the public-health department to offer the G.P. some of the facilities he might expect from a health centre—for example, clerical help. The scheme would undoubtedly place a small additional burden on the State and/or the local authority, but this would be minute compared with the cost of a health centre.

HELP FROM THE HEALTH DEPARTMENT

In essence the proposal means using the administrative set-up of the medical officer of health as offices for the G.P.s of the district.

Every 3–4 G.P.s would be allocated one clerk to act as personal assistant. To ensure continuity of service—during lunch intervals, sickness, and holidays—each clerk would have a deputy, who might well be the clerk to another group of doctors. The clerk would take down and type letters, prepare certificates for signature (when this was practicable), telephone to hospitals, nursing associations, and other agencies to arrange for and on behalf of patients and to inquire about them. The doctors, during their surgeries or at other times, might find it convenient to telephone the health department for messages or to ask that letters be prepared for them to sign later. Occasionally the clerk might visit the doctor's surgery to file his records. When it was convenient patients could call at the health department instead of the surgery for certificates and other papers.

The clerk might also make appointments for the doctor and try to contact him or a substitute in an emergency. In this way the public by ringing the health department, would be able to get hold of a doctor quickly: and the doctor need no longer have his front door and telephone continuously attended. Such arrangement might even be extended to the evening and night, by using the services of a janitor.

A dressing-station might also be set up near, if not actually in, the health department. This would be staffed by a trained nurse who would do minor dressings for patients under the instructions of the family doctor; and the doctor might also attend himself. He would thus be relieved of time-consuming procedures in his surgery without sending the patients to hospital. The patients would save time (an appointment system would be easy to arrange), they would be saved from the impersonal atmosphere of a hospital outpatient department, and, dare I say, they would have their dressings, or at any rate their bandages, more skilfully applied.

An essential part of the scheme would be to set aside a room which could be used by G.P.s as a common-room for dictating and signing letters. This would soon become a centre where the M.O.H. and his staff would have opportunity for discussion with the G.P.s, encouraged, perhaps, by a supply of tea and coffee. Notices on matters of medical or public-health importance, such as the local incidence of infectious diseases, could be displayed, and a few current medical journals and recent textbooks supplied.

QUID PRO QUO

It might reasonably be agreed that as help was being given to the G.P.s they should bear a substantial part of the cost: it seems unlikely, however, that many of them would consider it worth while to pay more than a nominal sum. On the other hand, they might well be glad to offer some services in return. Each might accept the duties of an assistant M.O.H. to his own patients. It would be difficult at first to define the duties that the practitioner would undertake, but I am sure some such plan helpful to both sides could be evolved.

The G.P. could, for instance, do rather more than he does at present to keep the M.O.H. informed of sickness trends in his practice. He might supply details, which did not involve breach of confidence, on patients with non-notifiable diseases of epidemiological importance or the subject of special study. He would advise the M.O.H. and the social workers on his patients even when they were not attending him. He could be asked to visit them to discuss the welfare of infants, control of infectious disease, care of the aged, and many other subjects. Only in emergencies would he be asked to visit people not on his list—for example, an aged person in need who was not on any doctor's list.

In all these duties he would naturally work under the M.O.H.; but the services provided for his correspondence and the transmission of messages would be confidential.

Possibly experimental arrangements of this kind could be organised under the present Acts by a liberal interpretation of the expression "health centre." If not a short amending Act would readily establish the legal basis on which a scheme could be developed.

London in 1953

The dangerous situation which threatens now that the public has largely forgotten about diphtheria is again illustrated by figures given in the report for 1953 [1] by Dr. J. A. Scott, medical officer of health for the County of London. Despite continued publicity and further efforts by L.C.C. clinic doctors and health visitors, the number of primary immunisations again fell during 1953, and the annual total was less than two-thirds of what it was in 1949. It is estimated from the London figures that by the end of 1953 the proportion of immunised children under five years had fallen to 51·5%—its lowest level since the immunisation scheme came into full operation. The report puts most of the blame on the apathy of parents, and goes on to say: "If the continuation of the present freedom from diphtheria is to be ensured, the number of immunised children under five, and particularly under one, must be substantially increased without delay."

Among the vital statistics for London, the report records a decrease in the death-rate from 12·0 per 1000 population in 1952 to 11·6 in 1953. The cancer death-rate continued to increase; and there were more deaths from violence than in the previous year, home accidents forming a disturbingly large part of the total. The infant-mortality rate was 23·9 per 1000 live births, compared with 23·1 in 1952, 25·4 in 1951, and 25·8 in 1950. The decline in the birth-rate, which has been going on since 1948, continues, but it is slowing down: in 1953 the London rate was 15·2 per 1000 population, as against 15·3 in 1952, 15·6 in 1951, 15·7 in 1950, 16·7 in 1949, and 13·4 in 1938.

In 1953, of every 100 children born in London, 85 attended a maternity and child-welfare centre at least once in their first year of life—the highest recorded figure. First home visits of health visitors to children under one were equivalent to 90% of the total live births. The number of domiciliary confinements, which has been declining since 1948, fell from

1. London County Council: Report of the County Medical Officer of Health and School Medical Officer, 1953. Pp. 162. 2s. 6d.

11,026 in 1952 to 10,472 in 1953. The total of midwives qualified to give analgesia has steadily increased and since 1950 all midwives employed by the council have been qualified to do so. In 1946 analgesia was given in 3% of domiciliary confinements; in 1953 the proportion was 77%.

One of the L.C.C.'s tasks is to keep watch on the condition of the water in the Thames, and its chemical branch makes a weekly examination at 25 points between Teddington Weir and the sludge-dumping area in the estuary—a total distance of 86 miles. The pollution load that the river can stand obviously depends a great deal on the rate of flow, and it is laid down by statute that abstraction for water-supply shall not reduce the flow over Teddington Weir to below 170 million gallons per day. The summer of 1953 was by no means dry, and the average daily flow for the months of July to September was 225 million gallons. Nevertheless, the condition of the river became extremely poor and was bad over a considerable stretch of its course for many weeks, particularly between London Bridge and Gravesend. But the report adds that new works for the additional treatment of sewage should shortly reduce the pollution load and counteract the progressive deterioration of recent years.

Northern Ireland in 1953

The Registrar-General for Northern Ireland [1] reports that in 1953 the general death-rate, the infant-mortality rate, and the death-rate from tuberculosis were again lower than in any previous year. The death-rate was 10·7 per 1000 population—0·1 below the rate for 1952, and 0·9 below the average for the five years 1948–52. The cancer death-rate of 1·54 per 1000 was, however, 0·07 above the five-year average; the annual number of deaths from cancer of the lung has more than doubled since 1943. The death-rate from tuberculosis (0·23 per 1000 population) compares with 0·30 in 1952, and a five-year average of 0·50. The infant-mortality rate of 38 per 1000 live births was exactly half the corresponding rate in 1923. The birth-rate (20·9 per 1000 population) was the same as in 1952.

1. Annual Report of the Registrar-General for Northern Ireland for 1953. H.M. Stationery Office. 3s. 6d.

Special Articles

HAZARDS AND HEALTH

IN his report for 1953 [1] the Chief Inspector of Factories (Sir George Barnett) records that the number of accidents (181,637) in premises within the purview of the Factories Acts showed the first appreciable increase since the 1939–45 war over the previous year's total (177,510); fatal accidents, however, decreased from 796 in 1952 to 744 in 1953. Several factors contributed to the rise in the total number, among them the increased number of man-hours worked and the increase in the range of processes undertaken by women workers.

Particularly disquieting is the increase in accidents to young people: commenting on the persistently high figures in this group, the Chief Inspector states that "Allowing young persons to be injured or killed is a form of extravagance in which British industry simply cannot afford to indulge"; and he quotes examples of accidents occurring "in circumstances so deplorable that one questions whether certain employers are fit to be trusted with 'this precious raw material.'" "Lack of proper instruction of young persons," the report adds, "is the greatest single cause of machine accidents"; and though the blame cannot always be laid at the door of the management, better discipline and closer supervision would prevent those avoidable tragedies which result from skylarking and youthful high spirits.

Referring to eye injuries, the report draws attention once more to the difficulty of getting workers to use protective devices, whether provided statutorily or otherwise. Much depends upon the attitude of the management: if they make it clear that they treat the matter with the utmost seriousness, then the workers also will understand the importance of taking all available precautions. The law, moreover, lays down that employers are obliged "not merely to provide the protection, but to exert all due diligence to see that it is used." Some factories have adopted the excellent practice of stamping job cards with appropriate reminders where the work demands special eye protection, and other firms have successfully organised intensive propaganda campaigns; but much more rigorous legislation is needed if the number of eye accidents (7738 in 1953) is to be reduced appreciably.

The provision in all factories of first-aid facilities has been compulsory since 1924, and though in some the legal standards have been far exceeded, in too many others the equipment consists of "small tin boxes covered with rust and dirt, containing the grimy remnants of their once statutory contents." Similarly, the standard of proficiency of first-aid attendants varies widely. All factories employing more than 50 workers are required to have a trained attendant, but the type of training is not defined, and no stipulation is made regarding the time that may have elapsed since the course was undertaken. The factory inspectors report an increasing difficulty in recruiting volunteers for first-aid duties, even where financial inducement is offered: this is disturbing, and it is to be hoped that some way will soon be found of impressing upon managements the importance of this aspect of their workers' health.

The report draws attention to the difficulty of persuading both employers and workers that a high standard of cleanliness can and should be maintained even where the trade is essentially a "dirty" one. Too often dirt and rubbish are allowed to accumulate in anticipation of the "great annual clean." The larger factories are in general better maintained than the smaller establishments, and some of the cleanest are those in which the "dirtiest" trades are carried on. Associated with cleanliness is the question of ventilation, and it is encouraging to note that, with the rising price of fuel, more and more firms are installing modern systems of heating which use waste-products for fuel. However, in a large number of factories the heating and lighting systems remain obsolete. The report recommends that architects should give the same attention to the ventilation of factories as they now give so successfully to concert-halls, schools, hospitals, and other public buildings.

The Chief Inspector observes that health is not a matter merely of protection against injury or disease: "if the individual feels that he is a unit, a clock number or a cog in a machine, not even the best provisions for his physical health will compensate for his sense of loss of recognition as a human being." Fortunately, there are signs that managements are growing steadily more aware of the need for promoting the mental as well as the physical well-being of their employees.

1. Cmd. 9330. H.M. Stationery Office. Pp. 257. 6s. 6d.

SENIOR REGISTRARS

STATEMENT BY MINISTER OF HEALTH AND JOINT CONSULTANTS COMMITTEE

THE Minister of Health has been reviewing the training plan for senior registrars instituted in 1951 in the light of the numbers actually employed and the factors which will affect the number of vacancies likely to occur in the higher grades in the period in which persons who enter the senior-registrar grade in the next few years will be completing their training.

After discussion with the Joint Consultants Committee as representing the medical profession, the Minister has come to the conclusion that generally the intake of senior

registrars in the various specialties is for the time being sufficient to meet future needs, and that the present number employed should be maintained pending the outcome of the discussions in which he and the Joint Committee are engaged on the general subject of the medical staffing structure of the hospital and specialist services.

Accordingly, in a letter of Dec. 13, the Minister has asked hospital boards to maintain their senior-registrar complement, in total and in each specialty, at the number at which it then stood, subject only to a few minor alterations.

When a senior registrar completes the tenure of his present appointment whether this is in a post within the training plan of 1951 or in a "transitional" post, the employing board is left free to extend his appointment for an additional year so that he may have more time to compete for a higher post if they are satisfied that his potentialities are such that he is likely, given more time, to obtain one. When a post becomes vacant, boards are expected to appoint to it a new senior registrar in the same specialty. As hitherto, there is nothing to prevent an existing senior registrar from obtaining another senior-registrar post in the same or a different specialty and holding it for the usual term.

Senior registrars whose tenure is extended under these new arrangements will, of course, continue to be free to compete for higher posts. It is emphasised, however, that their retention as senior registrars will not give them any special claim or constitute any guarantee that they will be successful.

The Joint Committee have expressed their agreement with these arrangements.

NEW YEAR HONOURS

THE list of honours published on Jan. 1 contains the names of the following members of the medical profession :

Baron

EDGAR DOUGLAS ADRIAN, O.M., M.D. Camb., F.R.C.P.
President of the Royal Society; master of Trinity College, Cambridge.

K.B.E.

Sir JOHN STOPFORD, M.B.E., M.D. Manc., F.R.C.P., F.R.S.
Vice-chancellor, University of Manchester.

Knights Bachelor

WILFRID EDWARD LE GROS CLARK, M.A. Oxfd, D.SC. Lond., F.R.C.S., F.R.S.
Dr. Lee's professor of anatomy, University of Oxford.

ARCHIBALD JOHN COLLINS, D.S.O., M.C., M.B. Sydney, F.R.A.C.P.
President of the British Medical Association in Australia.

LEYBOURNE STANLEY PATRICK DAVIDSON, B.A. Camb., M.D. Edin., F.R.C.P.
President of the Royal College of Physicians of Edinburgh; professor of medicine, University of Edinburgh.

ARTHUR ALEXANDER GEMMELL, M.C., T.D., M.A., M.D. Camb., F.R.C.S.E.
President of the Royal College of Obstetricians and Gynæcologists; gynæcological and obstetrical surgeon to the United Liverpool Hospitals.

ROBERT REYNOLDS MACINTOSH, D.M. Oxfd, F.R.C.S.E., F.F.A. R.C.S.
Nuffield professor of anæsthetics, University of Oxford.

C.B. (Military)

Major-General CHARLES WILLIAM GREENWAY, C.B.E., M.R.C.S., Q.H.S.

Surgeon Rear-Admiral JAMES HAMILTON, C.B.E., M.B. Glasg.

C.B. (Civil)

Hon. WALTER SYMINGTON MACLAY, O.B.E., M.D. Camb., F.R.C.P.
Senior medical commissioner, Board of Control.

C.M.G.

CYRIL FRANCIS FERNANDO, O.B.E., M.D. Lond., M.R.C.P.
Physician, General Hospital, Colombo.

RAYMOND LEWTHWAITE, O.B.E., D.M. Oxfd, F.R.C.P.
Director of Colonial Medical Research.

C.V.O.

JOSEPH GRAEME HUMBLE, M.R.C.S.

C.B.E. (Military)

Surgeon Captain JOHN HENRY BREUELL CROSBIE, M.B. Dubl., R.N. retd.

Major-General FREDERICK CAVENDISH HILTON-SERGEANT, M.B. Lpool, Q.H.P.

C.B.E. (Civil)

ARTHUR FREDERIC ALFORD, M.B. Brist.
Senior medical officer, Ministry of Education.

WILLIAM EDWARD LODEWYK HAMILTON CROWTHER, D.S.O., V.D., M.B. Melb., F.R.A.C.P.
Hon. consulting physician, Royal Hospital, Hobart; president, Medical Council of Tasmania.

MAURICE WALTER GOLDBLATT, M.D., PH.D. Lond.
Director, industrial hygiene research laboratories, Imperial Chemical Industries Ltd.

JOSEPH HAROLD SHELDON, M.D. Lond., F.R.C.P.
Director of medicine and senior physician, Royal Hospital, Wolverhampton.

DENIS JOHN WILLIAMS, M.D. Lond., D.SC. Manc., F.R.C.P.
Civilian consultant to the R.A.F. in neurology and electro-encephalography; physician in charge of neurology, St. George's Hospital.

O.B.E. (Military)

Surgeon Commander THOMAS WILSON FROGGATT, M.B. Sheff., R.N.

Lieut.-Colonel JOHN IRVINE, M.B. Glasg., R.A.M.C.

Lieut.-Colonel THOMAS MCGREGOR MCNIE, M.B. Glasg., M.R.C.O.G., R.A.M.C.

Wing-Commander JOHN HOPE POOL, M.D. Durh., R.A.A.F.R.O.

O.B.E. (Civil)

BASIL WILLIAM ARMSTRONG, M.C., M.B. Lond.
Lately medical superintendent, Royal Sea Bathing Hospital, Margate.

DAVID ALEXANDER BAIRD, M.B., B.SC. Edin.
Director of medical services, Somaliland.

ARTHUR BEAUCHAMP, M.B. Birm.
General practitioner, Birmingham; for services to the Ministry of Health.

ELIOT CECIL CURWEN, M.A., M.B. Camb.
Hon. physician, Police Convalescent Seaside Home, Hove.

WELIWATTAGE LIVERIS PERERA DASSANAYAKE, L.R.C.P.E.
Superintendent, filariasis campaign, Ceylon.

WILLIAM MARSDEN FORD-ROBERTSON, M.D. Edin.
Medical director, Lebanon Hospital for Nervous and Mental Diseases, Beirut.

THASSOS CHARIDIMOU GIRCOTIS, M.D. Vienna
For medical services in Cyprus.

GEORGE RAJANAYAGAM HANDY, M.B. Lond.
Visiting physician, General Hospital, Colombo.

WILLIAM EDWARD HUTCHINSON, E.D., M.D. Dubl., J.P.
A.D.M.S. (civil defence), Singapore.

EDWARD NORMAN JAMIESON, F.R.C.S.E.
Surgeon, Lewis Hospital, Stornoway.

JAMES HUTCHINSON KENNEDY, B.M. Oxfd
Government medical officer at Ndanga, Southern Rhodesia.

ARTHUR GENTRY PITTS, F.R.C.S.
Medical practitioner, Waimate, New Zealand.

JOHN HERBERT OWEN ROBERTS, M.D. Lond., J.P.
Medical superintendent, North Wales Hospital for Nervous and Mental Disorders, Denbigh.

LORIS ROHAN SHARPLES, M.B. Edin.
For public services in British Guiana.

WALTER ANSLEY YOUNG, M.R.C.S., J.P.
For public services in the Federation of Malaya.

M.B.E. (Military)

Major THOMAS CHARLES AYRES, T.D., R.A.M.C., T.A.

Captain IVOR ROBERT BESSANT, R.A.M.C., T.A.

Captain ALEXANDER JOSEPH ZOSIMUS NAVARATNE, Ceylon Army Medical Corps.

Squadron-Leader ERNEST SIDNEY ODBERT, M.B. Dubl., R.A.F.

Major LESLIE FRANK RICHMOND, T.D., M.D. Durh., R.A.M.C., T.A.

M.B.E. (Civil)

MOYA KATHLEEN BAILEY (née BLACKALL), M.B. Sydney
Medical practitioner in the Australian Capital Territory.

FRANK HOWARD BUDDEN, M.B. Lond.
M.O. (ophthalmology), Northern Region, Nigeria.

MARIA LEONORA DU TOIT
For medical services in the Tiv division, Northern Region, Nigeria.

JANE EVANS
Medical missionary in Egypt.

LUCIEN ARNOLD GUNESEKERA
Medical practitioner, Colombo.

JAMES DONALD HOLMES, M.B. Glasg.,
Admiralty surgeon and agent, Finchley and district, London.

THOMAS AFFLECK MORRISON, M.B. Aberd,
Chairman, Brighton Executive Council.

CHARLES VINCENT MTAWALI
African assistant M.O., Tanganyika.

IDA MIRRIELEES SEYMOUR, L.R.C.P.E.
Lately medical officer, Department of Health for Scotland.

Medicine and the Law

Capital Punishment

Mrs. Styllou Christofi, a Cypriot, was charged with the murder of her daughter-in-law. She spoke practically no English and her trial was conducted with the aid of an interpreter. She was found guilty and sentenced to death at the Central Criminal Court on Oct. 28. An appeal to the Court of Criminal Appeal failed, and the Home Secretary decided not to recommend a reprieve. She was executed at Holloway Prison on Dec. 15.

The hanging of a woman is comparatively rare: this is only the third case since the war. The case is unusually important for two reasons.

First, there is some doubt as to the woman's mental condition, particularly at the time of the murder. Dr. Thomas Christie, principal medical officer at Holloway Prison, in a report dated Oct. 5, said that after observation of the prisoner since July 30, he had formed the opinion that she was insane, but was medically fit to plead and stand trial. He wrote[1]:

"The clinical picture is that of a non-systematised, delusional mental disorder. This is a disease of the mind. In my opinion, the fear that her grandchildren would not be brought up properly induced a defect of reason due to the above disease of the mind whereby, however much she may have been capable of appreciating the nature and quality of the acts she was doing, at the time of the acts the defect of reason was such that she was incapable of knowing that what she was doing was wrong."

If Dr. Christie was right in that opinion, then Mrs. Christofi was insane within the meaning of the McNaughten rules. A copy of his report was furnished to the defence, but on the prisoner's own instructions the defence did not raise the issue of insanity. As she was deemed fit to plead, counsel had no option but to accept her instructions.

After the prisoner's appeal had been dismissed, the case came before the Home Secretary. If it appears to the Home Secretary that there is reason to believe that a prisoner under sentence of death is insane, he must by the Criminal Lunatics Act, 1884, appoint two or more legally qualified medical practitioners to examine the prisoner and to inquire as to his insanity. In view of Dr. Christie's report, the Home Secretary appointed three doctors to conduct an inquiry. They reported, according to the Home Secretary's explanation in the House of Commons,[2] that Mrs. Christofi was not in their view insane; and they added that in their view she did not suffer from any minor mental abnormality which would justify them in making any recommendation on medical grounds relevant to the question of a reprieve. The Home Secretary also disclosed that Mrs. Christofi would not agree to electro-encephalographic examination.

Secondly, this case raises again the question of the Home Secretary's responsibility and his relations with Parliament. At the time of the Bentley case,[3] the Speaker ruled that a particular case could not be raised in the House prior to reprieve or execution, but that after reprieve or execution the Home Secretary was answerable to the House. This ruling has obvious disadvantages in that execution settles a case beyond recall, but there are clearly reasons for it. In the Bentley case, however, the then Home Secretary, Sir David Maxwell Fyfe, did receive deputations of M.P.s.

In the present case the new Home Secretary refused to receive such deputations, although he agreed "as an exceptional step" to see Mr. D. Weitzman, Q.C., M.P., who was counsel for the defence at the trial. When questioned about this in the House after the execution, he said: "I am sure that, while it is of course open to Members of Parliament to submit representations to the Secretary of State, the House will agree that a Home Secretary should not be expected to receive oral representations, even from hon. Members, and to discuss the case with them, when he is engaged in the discharge of this onerous and anxious duty." After the execution, the Home Secretary was asked to publish all the medical evidence and the advice given to him by the trial judge. The Home Secretary replied that he was not prepared to make these documents available; it would, he said, be contrary to long-established practice and open to considerable objection.[2]

The Home Secretary's refusal to publish the documents makes it difficult to form a judgment on this case and leaves certain questions unanswered. For instance, it is not clear whether the Home Office doctors expressly dissented from Dr. Christie's opinion that Mrs. Christofi was insane at the time of the murder, or whether they were principally concerned with her mental condition at the time of their examination. When insanity is pleaded at the trial, the court is concerned solely with the prisoner's mental state at the time of the murder, but the Home Secretary in considering a reprieve may also take into account the prisoner's subsequent mental state.

Publication of the report of the Home Office doctors would have been valuable in another connection. Had Mrs. Christofi pleaded insanity, that defence might well have succeeded in view of Dr. Christie's report. It is likely that Mrs. Christofi threw away her best line of defence. That raises the question of how far a prisoner, as to whose sanity there is some doubt, is the best person to decide his or her defence. It is difficult to see how that right can be taken away from a person deemed fit to plead, and for that very reason the prerogative of mercy assumes an especial importance.

The legal and administrative difficulties involved in these cases would disappear if there were no death penalty.

Death after Ambulance Journey

The death of a 72-year-old man after transfer as a sitting case by ambulance from Glasgow Royal Infirmary to Helensburgh Victoria Infirmary was the subject of a fatal-accidents inquiry in Glasgow on Dec. 23.[4] The jury returned a formal verdict that the man had died as a result of a broken rib puncturing his lung during the journey. The widow gave evidence that her husband had become very ill while sitting up throughout the journey. A doctor from the Royal Infirmary stated that he had given instructions for the man to be transferred as a stretcher case. A pathologist who had done a necropsy said that if the patient had travelled lying down the movement of the rib would have been reduced.

1. *Daily Express*, Dec. 15, 1954.
2. See *Lancet*, Jan. 1, 1955, p. 53.
3. *Ibid*, 1953, i, 279.
4. *Glasgow Herald*, Dec. 24, 1954.

A Letter from the Hospital

At an inquest in Doncaster on Dec. 20,[1] the coroner returned a verdict of suicide while the balance of the mind was disturbed in the case of a 30-year-old woman who had been found gassed in the kitchen of her home. The coroner said that there was a history of mental illness since the birth of a baby in October. The woman had been admitted as a voluntary patient to Middlewood Hospital, Sheffield; and, according to evidence at the inquest, on the day of her suicide she had opened a letter from the hospital, addressed to her husband, stating that her condition had "not improved." The coroner wanted to know why the letter was sent to the woman's home instead of to her doctor; and why it was "merely a typed document with blanks filled in and signed by the clerk." "I do not think," he declared, "there is any doubt it had the final effect of making her lose her balance, and I think there is no question whatever she decided on the spur of the moment to take her life in consequence."

An official of Sheffield no. 2 Hospital Management Committee, whose group includes Middlewood Hospital, is reported to have said that the medical superintendent was considering whether it might be advisable to omit any reference to the patient's condition from the form sent to the relatives. The letter mentioned at the inquest was a statutory form laid down by the Board of Control.

Habit-forming Drug

The habit-forming characteristics of pethidine were referred to in a recent case in which the wife of a doctor was granted a decree for the restitution of conjugal rights.[2] The husband's cross-petition for divorce on the ground of cruelty was rejected.

The parties were married in 1941. Between 1948 and late in 1953 the wife underwent a number of serious operations and her health began to deteriorate. After a major epileptic fit in 1952 she was admitted to The Retreat, York, and after about three months' treatment was formally discharged. The following year she again entered The Retreat, and while she was there the husband wrote to her that in no circumstances would she be admitted to his house again and refusing to let her see their child—a letter which, said Mr. Justice Wallington, indicated the husband's determination to bring the marriage to an end.

Dealing with the husband's allegations of cruelty, his Lordship said that it was common ground that the acts alleged were due to the fact that late in 1951 the wife became a drug addict, after injections of a particular drug given to her after the operations. "It is a synthetic drug, and it was not realised for some time after it appeared on the market that it was a habit-forming drug." The judge said that he was satisfied that the wife had acted to some extent as the husband had alleged. She pressed him for injections, disturbing his rest, distracting him when he was attending his patients during the day, making him less confident in his work and less fresh in mind and body.

There came a time, said the judge, when the husband knew all about pethidine. The time came when he injected the drug with a frequency which he knew must have a disastrous effect on his wife. "I am not charging him with doing anything consciously wrong. He was in a great difficulty and he had to choose between losing his sleep and the disturbance of the child, and giving his wife a drug which would make her quiet. I am dealing with this case on the footing that he did not do anything which he knew to be morally wrong. He was too kind to her because he did not like to see her suffer pain."

The husband, his Lordship continued, had never suggested that he was prevented from carrying on his practice apart from his own two illnesses, although he might have been hindered. After describing some of the husband's evidence as exaggerated to the point of improbability, the judge said: "I cannot find that the husband has proved any danger to his health, bodily or mental, as the result of the wife's conduct. His charges of cruelty therefore fail."

1. *Star, Sheffield*, Dec. 20, 1954.
2. *Yorkshire Post*, Dec. 22, 1954.

In England Now

A Running Commentary by Peripatetic Correspondents

GRANNIE'S passion for locks and keys was a source of unending amusement in the Smith family. On her bedroom door was a Yale lock, two bolts, and a hook-and-eye catch. Her small bureau "for her papers" was reported to be a honeycomb of secret drawers. She kept her keys in a purse under her pillow and in the three years I visited her I never knew her to lose grasp of this purse. Indeed I believe she slept with her arthritic fingers firmly locked around it. It was not that she was ungenerous; her grandchildren adored her: but she had a fixture for locks and keys. Just as many ageing folk develop a fancy for acquiring things, hoping that an accumulation of life's trappings will give them a surer hold on life itself, so Grannie put away, firmly closed, and locked everything, hoping, perhaps, to conserve and extend her own contracting days.

Once, when her purse burst open and her keys fell in a shower over the bed, I laughed and said: "Grannie, I can see every key except the Key to the Kingdom of Heaven!" Gravely she pointed to her heart and said: "I keep *that* one locked in here."

She had a great fear of hospitals and made me promise more than once that I would never send her there. It was therefore with a troubled mind that I read the pathologist's report: *S. typhi* isolated. I told the family that I did not think we should be sentimental about her distrust of hospitals and that I meant to send her to the isolation unit as soon as possible. They were, of course, in agreement. So I went upstairs to her bedroom and sat on her bed and took her hand and said: "Grannie, I am afraid I must break my word. You have got a serious illness which you could pass on to the family. I have arranged for your admission to hospital." She gave me a long steady look which I shall not forget.

Before the ambulance came she gave her daughter all the keys, commanded her to unlock every lock and open every drawer and box and cupboard in the room. She gave precise instructions how to slide back the panels which revealed the secret departments in her bureau. Most of the drawers were empty. Some contained a small amount of paper money, old letters tied with ribbon, her dead husband's tobacco-pouch now containing crushed lavender, a few trinkets.

By this time the ambulance had arrived and with great composure she lay on the stretcher. As she was being taken out of the door her daughter rushed up to her and said: "I will bring up all your keys later, Grannie." "I have the only one I need," she said.

* * *

I had a Greek girl in outpatients yesterday and asked her if she was breathless. She didn't understand, so in despair I asked if she had dyspnœa. "Ah, yes," she said, "I have dyspnœa and you speak Greek."

* * *

The DC-3 glided to a halt in front of the little airport buildings, and I stepped out into the glare of the Colorado sun, feeling very British and conspicuous in my dark lounge suit among the light summer attire and gaily coloured shirts around me. There was something remarkably fresh and invigorating about the air and the expanse of open country around the airport, after the noise, exhaust-laden atmosphere, and urgency of Chicago. My host from the hospital was waiting, and after a quick lunch he suggested a short sight-seeing drive. This proved to be a modest run of 180 miles over arid desert, through the picturesque little town of Montrose, so different from its Scottish namesake, to the Black Canyon of the Gunnison. The forbidding grandeur of this grim canyon, the beauty of the lakes and coniferous forests at the top of the Grand Mesa, and the red magnificence of the rock formations of the Colorado National Monument, which we visited next day, defy description.

But my visit was a professional one; the local medical society dinner was planned for 7 P.M., my lecture for 8.15 P.M., and at 6.55 P.M. we were at the hospital. The secretary of the society met us, looking a trifle sheepish. "I'm sorry," he said, "but the cooks thought the dinner was tomorrow night." The society put its heads together and decided we should go to the president's

for liquid refreshment and to think things over. We climbed into roughly fifteen cars and descended upon the president's wife, who responded manfully, as American wives do. At 7.45 P.M. it was decided that we should dine at the local restaurant, which for so small a town was remarkably sumptuous. Conversation flourished, except when I mentioned the National Health Service. By 8.45 P.M. our numbers had risen to roughly fifty, we were on Christian name terms, and the society decided that perhaps I ought to be delivering my lecture. We straggled back to the hospital, and were entering the lecture-room when Joe realised that he had forgotten the projector. Jake sprang into the breach and into his Jaguar, and was back within ten minutes carrying a small black box, which, on being opened, unexpectedly proved to contain an electric sewing-machine. But in due course another box was produced, this time the right one, and Jake atoned by acting as projectionist. At 9.15 P.M., provided with a broomstick to use as pointer, I began my lecture. Faced with a professional topic, the audience subsided into gloom, which was rapidly dispelled a few minutes later, when the screen fell over. Whether my subject interested my audience, I cannot tell, but I certainly enjoyed the evening.

* * *

All men wear trousers in public, and most accept the convention of having them done up. In the old days the loss of a button mattered little and the defect could be quickly remedied at home at the end of the day. But with the introduction of modern closing techniques the situation has become potentially dangerous.

Lately, while visiting a famous foreign clinic I had occasion to leave the room between cases, whereupon the most vital of all zips literally came off in the hand. All efforts to restore the situation were fruitless. Return to the clinic was unthinkable, it was too long to wait, at any rate there, and the possibility of a message to the operating-theatre for a row of Michel's clips occurred to me too late. Action was imperative, and for better or worse I decided on flight. Simulating confidence, looking neither to right nor left and with head erect—to increase anterior tension—I reached the hospital exit without apparently attracting attention.

As luck would have it at the first corner was a clothing store. But inside was a woman choosing ties for her husband. She was in no hurry and the assistant showed signs of waiting to leave her to make up her mind and attend to me. I feigned interest in a box of socks farther down the counter. When the opportunity for explanation finally came the assistant regretted that they had no facilities for repairs but suggested a tailor farther down the street. This meant another public appearance but again I excited no undue attention. The next hazard was the least expected. The only attendant behind the counter was a woman. Flight seemed ridiculous. She was middle-aged, of kindly demeanour, and wore a wedding-ring. I outlined the general position. She explained that the tailor himself was ill but that there was another four blocks away. This distant craftsman proved to be male, but a heartless scoundrel who took full advantage of my situation: zips were irreparable, he declared, and he was too busy to insert a new one that day; he advised me to buy a new pair of trousers. I pointed out that none of his trousers matched my coat. He replied that non-matching trousers were the current fashion in America. Finally he suggested a row of safety pins and scornfully declined payment. Walking delicately, like Agag, I was now able to return to the clinic, but explanations caused more entertainment than sympathy.

* * *

I like to go to Guidance Clinic
And be a charming little cynic
And paint the walls all scarlet red
And hit caretakers on the head,
For this reveals my true intents
And latent talents, and prevents
The insalubrious suppression
Of all my long-pent-up aggression.
I like to paint the Clinic red
And hit caretakers on the head,
But, mother-figure, is it true
There's *nothing* that I mustn't do?

Letters to the Editor

SANATORIA

SIR,—The leading article in your issue of Dec. 25 suggests, on the basis of some American evidence, that the introduction of antibiotics has rendered obsolete a good deal of sanatorium treatment.

No worker in the field of tuberculosis can doubt the value of the new antibiotics; but they have been introduced against a background of better nutrition amongst the poorest classes, financial arrangements that permit a patient to rest in a sanatorium without economic catastrophe, the raising of the standard of treatment throughout the country to the level previously enjoyed only by a few areas, enormous improvements in and much wider application of surgery, and a better understanding of pathology.

To treat a lesion instead of a patient is always bad medicine: in tuberculosis it is a disaster. Yet, in asking if some of the patients could not be safely treated with drugs whilst they work, your leader suggests precisely this fallacy. In any case, we know the answer. It has been my lot to have referred to me a considerable number of doctors suffering from this disease. Owing to the quaint but widely held belief that disease always runs a different course in the medically qualified, they have in many cases been treated by antibiotics whilst continuing their work. Without exception, they have deteriorated on this régime.

A young man or woman may acquire tuberculosis because of an overwhelming infection by a close contact whilst in a susceptible state or because of greatly lowered physical resistance, as in semi-starvation conditions—for example, in a prisoner-of-war camp. More commonly, however, the disease arises because resistance to endogenous or exogenous infection has been lowered by domestic or financial difficulties, by driving ambition in excess of ability, or by failure to adjust to environment. If an initial minimal lesion is controlled by drugs or cut out by a surgeon, but the resistance not raised and tensions not released, further lesions are likely to arise. To such a patient, a sanatorium régime, if sympathetically and skilfully applied, will not only enable him to overcome his current infection, but will induce a state of mind and a philosophy that will afford a considerable measure of protection for life. Whilst the smell of pine needles and a rarefied atmosphere do not affect the tubercle bacillus directly, I do firmly believe that a patient will recover more permanently if he watches the serene beauty of forest and meadow from his bedroom window, than if he passes several months of enforced idleness looking at a factory chimney.

The abandonment of country sanatoria may be a necessity, but let us not try to make a virtue of it. Some of them may be unfit for the middle-aged: it would be a wise investment to rebuild them. The Norwegians are emptying their sanatorium beds but only because they are eradicating the disease and not because they are keeping their active cases at work.

You question the wisdom of confining "non-infectious young people for months in surroundings where they suffer . . . the possibly adverse effect of being surrounded by others with the same disease." If the adverse effect referred to consists of mental depression by contagion from despondent "chronics," then the sanatorium must indeed be a badly managed one.

Finally, may I stress as axiomatic that a patient who is ill enough to need treatment with antibiotics is ill enough to be in bed.

Liverpool. LESLIE J. TEMPLE.

SIR,—Your editorial does not pay the credit due to my late chief, Sir John Robertson. As medical officer of

health for Birmingham he it was who had learnt and taught the value of George Bodington's work, and who instituted the campaign against tuberculosis, including the building of the sanatoria. The emphasis he placed upon sanatoria was in mental and physical rest, in pure air, with good food; and where the patient's home was of the right standard, he regarded it as the safest and best place in which to treat infectious disease. The treatment of pulmonary tuberculosis was to include nothing unpleasant but everything which brought rest, comfort, cheer, brightness, and fresh air to the patient and his family; and the family doctor was the best person to undertake it.

As the tuberculosis service has developed I have watched the progressive departure from these ideals. The tuberculous patient has gradually been taken out of the hands of the family doctor by the institution of specialised techniques—pneumothorax, pneumoperitoneum, phrenic-nerve paralysis, thoracoplasty—and what is still more important these measures have been adopted as substitutes for rest (e.g., if a patient could not be found a bed in a sanatorium pneumothorax was induced to rest the lung). After hundreds of thousands of patients have been treated by this means, we are now told that they are of little use—lung resection and thoracoplasty are the correct treatments. But not while the patient has an active focus, for operation at such a time can spread the infection to normal lung: lung resection must not be done until the lesions have healed. So patients now admitted to sanatoria are told that later, when they have recovered, they may have to have their lung removed. As Dr. Houghton and Dr. Corrigan pointed out, "the patient who enters a modern sanatorium can no longer contemplate a period of tranquillity and freedom from personal anxiety." Modern sanatorium treatment has caused people to look upon the disease with horror; therefore, let us get back to the teaching of Sir John Robertson. Give the patient the rest, comfort, and cheer, and restore the family doctor to his rightful place. We can the more readily do this now that we have efficient drugs.

Birmingham, 15. JAMES F. BRAILSFORD.

SIR,—Your leading article poses several questions of great importance. The picture, as you say, has been profoundly changed by the antibacterial drugs and it is timely for many of the old methods to be re-examined. The case of the tuberculous child must, however, receive special consideration.

Whilst it may be reasonable, as you suggest, to treat certain adults with small uncavitated lesions "with drugs while they work" this method should not be considered in the case of school-children except under the most careful safeguards. These small uncavitated lesions of adult-type disease in adolescents demand the closest attention. They are likely to be recent and tend to progress and spread if not dealt with energetically.

Nor should there be any questions arising in the case of children about "the irritations of institutional life" and "the possibly adverse effect of being surrounded by others with the same disease." Whilst far too many of our boys and girls still become infected with tuberculosis, only a small proportion of the cases that come to light call for prolonged institutional treatment. In this group should certainly be included the rare cases of children with adult-type disease. These should be admitted only to sanatorium schools fully equipped both medically and educationally.

Probably it is true to say that tuberculous children scattered in small numbers and isolated groups throughout the country have been neglected in the past. Certainly this is the case today, for from time to time young people with tuberculosis are admitted to my sanatorium who have received previous treatment in surroundings quite unsuited to their tender years and educational needs. Numerically the problem of how best to provide for these handicapped youngsters is small. Probably half a dozen comprehensive centres would cover the needs of the whole country. The names of two or three readily suggest themselves. All that is required is a little interest and understanding of the problems involved at the appropriate administrative levels.

High Wood Hospital for Children, Brentwood, Essex. F. J. BENTLEY.

HÆMOLYTIC TRANSFUSION REACTIONS

SIR,—I do not understand why, when blood-transfusion is to be discussed, so many protagonists entangle themselves with arguments on blood-grouping. True, blood-grouping is an important factor in blood-transfusion, but it is only one factor among several, such as the collection of donor blood, its storage, distribution, and administration; and I cannot admit its pre-eminence among these. Blood-transfusions are given to save lives; and it is our duty to remember this, and not to waste our energy on sterile recriminations. No two patients have the same needs, no two hospitals the same patients. One hospital may receive no emergency admissions, and have but a limited number of elective operations; in such a hospital blood-grouping can be done by the most elaborate and time-consuming methods without harm to any and with benefit to all. Another receives patients from a large, sparsely inhabited tract of land; the patients who survive the journey to hospital will readily tolerate two or three more hours' delay, so slow methods may again be used (though I think a flying-squad using rapid methods might not be out of place). In a city, a hospital may receive all the emergency work—traumatic as well as medical—from a population of 250,000 within a radius of 3 miles; here patients more often survive the journey to hospital but may arrive in the receiving-room grey, pulseless, with air hunger and barely conscious. It is for these and those a little less ill that I am concerned: and it is with such patients in mind that I decided, eight years ago, that I must provide a blood-transfusion service which would tolerate only the minimum of delay.

During these eight years, although I used the more complicated methods freely, I have depended chiefly on the simplest methods. So far, I have killed no-one, though I have made a dozen blunders; but I have found that every one of these dozen blunders was due to a failure of the human element—not to a failure of the simple method being used. Every blunder was revealed by simple repetition of the test by someone working without anxiety or preoccupations—often by the person who made the original mistake. I therefore offer no apologies for my "crude" methods, for "crude" they may be called, though they revealed an anti-c and an anti-P.

Besides this ethical problem (for I claim that these rapid methods probably save half a dozen lives a year, and add only infinitesimally to the danger of transfusion) there are the various practical points which have been brought up in this correspondence. Dr. Taylor (Dec. 18) and Dr. Walther (Dec. 25) believe that tube methods are so much more reliable than any others that they must be adopted; I would refer them to one paper [1] which shows that in some conditions tile methods for ABO grouping may be more reliable than tube methods, and I would remind them of the method of the inclined capillary tube for Rh testing [2 3]; one of my colleagues has performed [4] a direct comparison with the tube method on 2500 samples without a discrepancy. These data indicate that the reliability of a serological technique

1. Allen, F. H. jun., Diamond, L. K., Madden, H. J. *New Engl. J. Med.* 1951, **244**, 925.
2. Chown, B., Lewis, M. *J. clin. Path.* 1951, **4**, 464.
3. Discombe, G., Meyer, H. *Amer. J. clin. Path.* 1952, **22**, 543.
4. Jacob, G. F. Personal communication.

may vary with the surroundings in which it is performed, that a method ideal for the unhurried reference laboratory may prove less satisfactory in the busy routine laboratory. Dr. Walther advocates the more general use of group-O rhesus-negative blood, but I fear that it would prove impossible to supply the quantities required, and since it can give rise to hæmolytic reactions it would prove little, if any, safer than the simplest methods of grouping and cross-matching.

Dr. R. M. Heggie (Dec. 18) is mistaken when he suggests that representations by any pathologist can produce an improvement in laboratories or increase of staff overnight; and that inadequacy of laboratory and staff is the fault of the pathologist. Too often the pathologist's appeals for staff and space are suppressed in the medical advisory committee or refused by the management committee; and even if his pleas are granted, there must be a delay of years before buildings are erected or staff trained. No pathologist can appeal to the regional hospital board over the heads of his colleagues, and if he appeals over the head of the hospital management committee, he is unlikely to obtain any satisfaction. It is not fair to impute all the blame to the pathologist and to exculpate the administrator who fails to provide essential facilities.

The actions of Dr. J. F. Heggie and his committee seem to have been beyond reproach; not so those of the other bodies who circulated that memorandum. There is real and widespread dissatisfaction over the dissemination of these memoranda, but this dissatisfaction could easily be overcome by the Ministry or the regional boards. Every hospital management committee should be instructed to arrange for the regional transfusion director to consult with the pathologists responsible for blood-transfusion in that group, and to submit agreed and detailed recommendations on the space and staffing needed to provide an adequate service, and on the deviations from optimal techniques which would be needed to utilise best the existing facilities. Differences of opinion would of course arise, and these could most easily be settled with the aid of members of a panel of specially experienced pathologists nominated by the Association of Clinical Pathologists.

I suspect that some of the warnings given in memoranda are open to question. Dr. Taylor praises Dr. Heggie's warning about infected blood, but I understand that Dr. Heggie's experience of such accidents is limited to three cases: when I encountered one of these in the High Court, the evidence suggested that the death was not caused by infected blood. One should realise that the whole North London Transfusion Service has had one death from infected blood in five years, during which period more than 500,000 bottles were issued. The evidence on which warnings are based should be published [5] and not restricted to some coterie of initiates.

I believe that blood-transfusion becomes safe when supervised by pathologists and technicians who are interested in it and who will spend time and energy on it. Such persons can use almost any method with safety.

I am glad that I differ so slightly from Mr. Evans (Nov. 27) in my approach to treatment. He admits that it is only in dehydrated patients that treatment with sodium sulphate is likely to be beneficial. I submit that it is difficult, during the first twelve hours, to differentiate the oliguria of dehydration from that of transfusion nephrosis, and Mr. Evans admits that if you make a mistake it will kill the patient: since 14 patients of 15 recovered without sodium sulphate, we need more convincing evidence of its benefits. For the same reason, I deprecate exchange transfusion, because most patients will recover quite quickly without it.

Central Middlesex Hospital, London, N.W.10. GEORGE DISCOMBE.

5. Wiener, A. S. *J. Amer. med. Ass.* 1954, **156**, 1301.

SERUM TESTS FOR SYPHILIS

SIR,—In your leader of Dec. 4 the incidence of non-specific reactions in the blood-transfusion service is given as 0·04% of sera tested. This gratifyingly low figure is surely due to the fact that donors are drawn from healthy young adults, a group in which such reactions would be expected to be rare. The incidence may well be different in general hospital laboratories testing sera from patients with a diversity of clinical conditions.

Antenatal sera form a group which may be compared with blood-donors since both represent healthy individuals. In recent years at the Whitechapel Clinic Laboratory the proportion of antenatal sera giving positive serological (S.T.S.) reactions has fluctuated round 0·6% but not enough of these have yet been investigated with the treponemal immobilisation (T.P.I.) test to allow more than very tentative conclusions to be drawn as to the incidence of non-specific reactions in pregnancy. I have carried out T.P.I. tests on 200 antenatal sera sent to the Venereal Diseases Reference Laboratory as "problem" sera because they had given positive or doubtful S.T.S. reactions in other laboratories. 174 of these were found to be positive with one or more of the four S.T.S. used in our laboratory; and of these, 60, or 34%, were T.P.I.-negative, suggesting that the S.T.S. reactions were non-specific. Although these sera form a highly selected group, the results suggest that the proportion of positive S.T.S. reactions in pregnancy which are non-specific may not be negligible, and, in view of the wide extent of antenatal testing, in the aggregate they may present a problem of some magnitude. It seems very desirable that the T.P.I. test should be more widely used to investigate this type of sera; but, for this to be possible, it will have to be established in more laboratories than the two already performing it.

It should also be stressed that the strength of the S.T.S. reactions is no criterion of their specificity, as judged by the T.P.I. test. Although sera giving strongly positive S.T.S. reactions are usually found to contain immobilising antibody, sufficient exceptions occur to make undue reliance on the S.T.S. titre unwise.

Venereal Diseases Reference Laboratory, Eastern Hospital, London, E.9. A. E. WILKINSON.

CORNEAL GRAFTING ACT

SIR,—The increasing numbers of inquiries which are received from doctors, solicitors, and the general public indicate that the provisions of the Corneal Grafting Act (1952) need further elucidation, especially with reference to the bequest of donor eyes. Briefly, the Act enables a person to make a verbal or written bequest of his or her eyes for therapeutic purposes but the bequest can be nullified by the objection of surviving spouse or nearest relative.

The collection of donor eyes is the responsibility of those who require them, subject to the provisions of the Act, and collection entails a certain amount of organisation and effort: in practice, death is usually notified to the hospital by the doctor in attendance or by a relation. The duty team then proceeds to collect the material, taking sterilised enucleation equipment which is always maintained in readiness; eyes have to be removed within 10 hours of death to be suitable for optical grafts. In our experience these melancholy occasions are invariably treated with a sense of dignity and respect by the bereaved relatives, who derive consolation from the fact that the last wishes of the deceased are carried out. The only occasion on which umbrage has occurred was when it was not possible to comply with a bequest because notification of death did not reach the surgeon in time and the relatives felt that they had not kept faith.

For administration purposes, and to arrange the orderly admission of patients for corneal grafting to hospital, the

preservation of donor eyes has become an essential part of this method of treatment. At the present time the most suitable method of preservation beyond a few hours is to bank the eyes in sterile antibiotic/liquid-paraffin solutions at 4°C in a refrigerator: such material is suitable for subsequent grafting up to 14 days after removal, provided it is sterile.

The sterility of cadaver donor eyes has become a matter of great importance as it has been found that about one-third of such eyes have initial contamination by pathogenic organisms and have to be discarded. This wastage can be checked by antibiotic preventive measures at the time of excision or before preservation. The eyes or corneas are well irrigated with penicillin solution before removal and are immersed in penicillin-streptomycin solution before being placed in the eye bank. Control cultures are taken at various stages of preparation and preservation: a positive culture excludes the use of the eye for donor material.

In the Corneo-Plastic Unit, Queen Victoria Hospital, East Grinstead, the supply of donor eyes has been more than doubled since the Corneal Grafting Act became law, but it is still far from adequate for all purposes. The indications of corneal-graft surgery continue to expand and the selection of material and cases becomes more and more critical. As a result of these measures and the use of improved material the standards of visual success are steadily rising and about three-quarters of those patients on whom a corneal-graft operation is performed may expect improvement of vision in varying degrees up to normality. A recent valuable adjunct to the final success of corneal-graft surgery is the use of the contact glass.

It is hoped that this summary may help to answer some of the many inquiries which are received and it is stressed that the collection of this valuable material has been much facilitated by the coöperation of the general practitioner, house-surgeon, relations, and ophthalmic surgeon.

London, W.1. B. W. RYCROFT.

CHEMOTHERAPY OF LEPROSY

SIR,—Dr. Lowe is to be congratulated on the good results he has obtained with sulphones in treating leprosy in Eastern Nigeria (Nov. 20), but experience in treating the disease in England prompts me to sound a less happy note.

Patients of various nationalities are receiving treatment for lepromatous leprosy at the Jordan Hospital, Earlswood, Surrey; they are principally Europeans and Anglo-Indians, and results with sulphone are, unfortunately, far from satisfactory. Although clinical improvement occurs first (thus encouraging the patients to persevere with treatment), bacteriological improvement lags sadly behind. Furthermore, nearly every one of these lepromatous patients receiving sulphones has had repeated reactions characterised by fever, erythema nodosum, neuritis, arthralgia, and mental depression. The successful management of such cases calls for considerable clinical experience.

I feel sure that Dr. Lowe would be the last to say that, thanks to sulphones, all is well in the therapy of leprosy; yet the average reader of his paper may have gained the impression that the disease has finally been mastered. In trying to find an explanation for Dr. Lowe's encouraging results, one must take into consideration the fact that the leprosy situation in Eastern Nigeria is particularly favourable, for the disease has largely been brought under control by the system of "clan segregation" which was instituted some twenty or more years ago. This has caused the lepromatous rate to fall considerably, leaving proportionately fewer advanced lepromatous cases.

This letter is written, not to belittle the excellent work in Eastern Nigeria, but to dispel any attitude of complacency which Dr. Lowe's paper may have engendered, and to warn readers that his results apply to Africans in a particularly well-favoured part of Africa and are exceptional. We have a long way to go in the treatment of leprosy, and the need for more research into newer and better methods of treatment is vital and urgent.

Hospital for Tropical Diseases, London, N.W.1. W. H. JOPLING.

PULMONARY EMBOLISM

SIR,—Your leading article of Jan. 1 is timely in drawing attention to a much neglected cause of prolongation of invalidism and of a steady mortality among the middle-aged and elderly.

Thrombosis of the deep veins of the leg in elderly patients is commoner that many of us imagine. If post-mortem figures are to be relied on, Hunter et al.[1] have shown that thrombosis of the deep veins is present in 52·7% of middle-aged and elderly patients confined to bed. They also found that these thromboses are relatively silent until the unheralded catastrophe of a massive pulmonary embolus. In a series of post-mortems performed by myself in the past few years massive pulmonary embolism was the immediate cause of 20 (4·4%) deaths out of 448. In 18 of these cases the catastrophe followed on operation or accident.

It seems that present-day preventive measures have failed; Israel[2] affirms that "great attention has been given to prevention of venous thrombosis by employment of early ambulation, prophylactic femoral vein ligation and the use of anticoagulants. It is disappointing that studies indicate no reduction in frequency in thrombo-embolism has been achieved."

There is some evidence, both clinical and laboratory, that too much fat in the diet predisposes to clotting. Fullerton et al.[3] have shown that after a large fatty meal the prothrombin and clotting times are greatly reduced compared with the fasting times. Other workers[4] have shown that a lipoid factor is essential for normal clotting, but its precise character has not been determined.

From the clinical aspect Dedichen et al.[5] have shown that in Norway the incidence of thrombo-embolic phenomena after operations liable to cause such complications fell very markedly during the German occupation. They believe this was due to the reduced diet, especially of fat; the calorie intake fell from 3470 to 2849 per day and the fat intake from 159 to 71 g. per day. In Denmark, during the same period, rationing was not severe; and the incidence of thrombo-embolic phenomena continued as before.

In view of the failure of present-day preventive methods, it might be worth arranging a large inquiry to show whether a light low-fat diet in the days after operation or trauma might not reduce the death-rate and invalidism from pulmonary embolism.

Worthing Hospital, Sussex. R. AIDIN.

REPAIR OF FEMORAL HERNIA

SIR,—In his letter of Dec. 18 Mr. Sandell makes a useful suggestion for the reduction of the sac in femoral hernia, but I notice that he advocates the Lotheissen operation. Surely the method of McEvedy is to be preferred? And better than either, in my opinion, is the approach through a lower paramedian incision, without opening the peritoneal cavity. I have used this approach routinely since 1948, and find it extremely satisfactory; but I have met few registrars or house-surgeons who have seen it used.

The rectus muscle is retracted to the appropriate side, and with gauze—or better still with the fingers—the fascia in the hypogastrium and iliac fossa is gently swept backwards. The upper surface of Gimbernat's ligament can then be seen, together with the disposition of the obturator vessels and the bladder. Further gauze dissection exposes the hernia, and one can usually predict the contents of the sac from its appearance, and from the history. With gentle pressure

1. Hunter, W. G., Sneeden, V. D., Robertson, T. D., Snyder, G. A. C. *Arch. intern. Med.* 1941, **68**, 1.
2. Israel, H. L. *Postgrad. med. J.* 1953, **13**, 98.
3. Fullerton, H. W., Davie, W. J. A., Anastasopoulos, G. *Brit. med. J.* 1953, ii, 250.
4. Macfarlane, R. G. *J. Physiol.* 1941, **99**, 7.
5. Dedichen, J., Strom, A., Adelsten-Jensen, R. Transactions of the 5th Conference, Josiah Macy, jun., Foundation, New York, 1951; p. 117.

below Poupart's ligament, and very gentle traction on the sac with gauze, judicious blunt dissection delivers the sac without cutting. The most adherent part seems often to be in front, and there may be delay in freeing the sac from the deep aspect of Poupart's ligament—which is, however, clearly visible.

The peritoneal cavity can, of course, be opened if, for any reason, that seems the safer method.

I consider it unnecessary to close the upper end of the femoral canal, but this can be done easily by stitching Poupart's to Cooper's ligament. As a rule there is remarkably little bleeding, and I have never seen a hæmatoma form in the thigh.

Familiarity with the space through which the operation is done is valuable, for it is the best approach to the prostate, a large portion of the bladder, the lower ends of both ureters, the obturator nerves, the proximal ends of the inguinal and femoral canals, the spermatic cords, and the external iliac vessels and lymph-nodes. The appendix and the female genitalia are also accessible if the peritoneal opening, made when the inguinal or femoral sac is cut off, is slightly enlarged; and it may be wiser to remove the appendix if there is anything odd about the pain ascribed to a right-sided hernia.

Harrogate. T. VIBERT PEARCE.

SYME'S AMPUTATION

SIR,—It would indeed be unfortunate if, following Mr. Shelswell's article of Dec. 25, the profession were induced to try again Syme's amputation, which was relegated to the surgical scrap-heap thirty years ago, and if the lessons, so slowly and painfully acquired during and after the 1914–18 war, had to be learnt once again. Soon after that war, the surgeons at Queen Mary's Hospital, Roehampton, of whom I was one, undertook a long and thorough review of Syme's amputation, in all its aspects. I would emphasise that this review was done with absolute impartiality and we had no brief from either the detractors or the sponsors of the amputation, though the latter were far the more vocal. Our findings were very definitely against the amputation, and in consequence it was accepted by surgeons, in this country, as obsolete. Our reasons for condemning Syme's amputation were:

(1) Less than 40% of the original Syme's amputations under review had been capable of taking full end-bearing. Most of the cases unable to take full end-bearing had had reamputation through the middle third of the leg and the vast majority of these reamputees had expressed the opinion that their efficiency had been increased, in greater or lesser degree.

(2) Secondary operations on the stumps of Syme's amputees—e.g., excision of scars, neuromata, &c.—were almost invariably "failures."

(3) The amputation was quite unsuitable, for æsthetic reasons, in women. For the same reason, though to a much lesser degree, it was undesirable in men.

(4) The prosthesis for a Syme's amputation necessitated a leather socket which is not as comfortable as willow or duralumin. Further, the leather socket has other disadvantages—e.g., smell, prevention of evaporation of sweat, &c.

(5) The "wear and tear" of a Syme's prosthesis was much greater than of the ordinary below-knee leg.

(6) The gait of the Syme amputee, with his prosthesis, was ungainly as compared with the below-knee amputee.

(7) The functional efficiency of the below-knee amputee, with a good stump, was slightly better than that of the satisfactory Syme amputee.

Perhaps our greatest difficulty in persuading the sponsors of Syme's amputation of its unsuitability was to convince them that, although the stump which they had fashioned so admirably might appear so wonderful to them, this was really no criterion at all.

If the matter is pursued, no doubt we will again have the old arguments adduced: that the limb-maker should make his prosthesis for the stump, not the surgeon the stump for the prosthesis; that many of the original Syme's amputations were faulty because of bad technique, or that they were done with improper indications (e.g., frostbite); that the stump which can take full end-bearing must be the ideal stump; that the Syme's prosthesis is cheaper than the below-knee prosthesis; and so on. All these arguments were carefully considered by us at the time, but we were in no doubt about our final judgment against the Syme.

The fallacy of Mr. Shelswell's investigations is that he has taken the residual "less than 40%" satisfactory Syme's amputees and has proved that 66% of these are satisfactory. This means that about 26% of the original Syme's amputations continue to be satisfactory—hardly a reason for resuscitating a discredited operation.

Croydon. G. C. WELLISH.

TRANSHEPATIC CHOLANGIOGRAPHY

SIR,—The Association of Surgeons at its meeting in Glasgow next April is to discuss diagnostic procedures in obstructive jaundice. I have been asked to collect information about preoperative transhepatic cholangiography—a procedure not often carried out—and I should be grateful if any of your readers who have had experience of it would let me have a brief account of their results, including particularly any complications.

121, Harley Street, London, W.1. DAVID H. PATEY.

MERIT AWARDS

SIR,—The M.D.B. circular no. 19, concerning the proportion of distinction awards payable to clinical teachers and research-workers holding honorary appointments, to which you referred briefly on Dec. 25 (p. 1335), must restrict the scope of research that is to be undertaken by such men. The fraction of the award now to be paid is to be based upon the number of hours spent in strictly clinical work, and time spent upon research is to receive financial reward only if it is "specifically related to the diagnosis and treatment of *individual* patients" (my italics of an important word which you omitted in your report). This restriction on the payment of distinction awards gives whole-time clinical research-workers a financial incentive to neglect the development of new diagnostic or therapeutic measures which must first be studied at the laboratory bench or upon animals. They will only be paid the whole of any award to which they are entitled if they either restrict their work to well-established procedures or if they try out the new operation, the new drug, the new catheter, and so on directly upon patients even though preliminary laboratory study is necessary! Nor can these researchers consider any extension of their interests into preventive medicine without financial loss. The man, for instance, who tries out well-known palliative treatment upon the victims of smog will get his award in full, but not the man who decides to investigate the effects of various atmospheric pollutants on the respiratory tract in order to guide preventive measures, or even to develop an efficient respirator to protect individuals before they become patients.

Distinction awards were, of course, originally introduced as a recompense for the loss of income from private practice which consultants in the N.H.S. were expected to suffer, so that it is logical to allocate them in relation to time spent in clinical work; but this is dangerous logic, and the decision to make whole-time academic clinicians fully eligible for the awards was a progressive step towards the recognition that those who cultivate the tree of clinical science deserve at least as great a reward as those who garner its fruits. The new regulation is a retrograde step, and if it is strictly applied it must have a harmful influence upon the development of clinical research in this country.

Richmond Green, Surrey. C. M. FLETCHER.

CURRENCY FOR TREATMENT ABROAD

SIR,—Since the war, it has been necessary to restrict the use of British currency abroad, and seven years ago, the Exchange Control Medical Advisory Committee was set up to deal with applications by patients advised to seek medical treatment overseas. No-one, in the Government or otherwise, liked the idea of restricting facilities used for health, and the responsibility of allocating foreign exchange on medical grounds was entrusted to a medical committee, with the duty to safeguard the interests of the patients, as well as conserve, so far as possible, our limited foreign exchange.

It is the Government's policy to simplify exchange control procedure, and in future the patient's bank will be authorised to grant foreign currency solely on the strength of a doctor's recommendation that it is required "on medical grounds." Banks will provide a printed form, but the doctor may write his own certificate, provided similar wording is used.

When currency is required for the United States of America or Canada, the patient's doctor will be asked to certify that the dollars are required "for medical or surgical treatment" which cannot be obtained elsewhere.

The Exchange Control Medical Advisory Committee would like to take this opportunity of thanking their medical colleagues all over the country for their patience and forbearance. The doctor has generally had the delicate responsibility of deciding whether he ought to support a patient's desire to go overseas, or whether treatment at home would be equally satisfactory. Judging applications has not been easy, but the committee is happy to think that, even in the most stringent financial period, over 75% of applications were granted, and during most of the committee's existence more than 85%. Few if any sick people in genuine need of treatment which could not be obtained in this country or the sterling area, have been unable to obtain it.

Exchange Control Medical Advisory Committee, Tavistock Square, London, W.C.1. HARLEY WILLIAMS Secretary.

VENEREOLOGY AND DERMATOLOGY

SIR,—Mr. King and Dr. Russell (Jan. 1) consider the recent advertisement of a combined post in venereology and dermatology to be a retrograde step. I would like to comment because I worked in that East Kent area from 1938 to 1946 and also because I happen to be one of the few consultants permitted to practise both specialties since the National Health Service began.

The incidence of venereal disease in East Kent would be insufficient to hold the interest of a venereologist, unless he were also attached to a larger centre, and, from my own experience, that entails a great deal of travelling and waste of time. Furthermore, clinical material and facilities for research—the life blood of an ambitious specialist—are not always available in a semi-rural area, but many good clinicians do not aspire to this.

In principle I am in favour of the separation of these specialties, although in many parts of the world they are still combined. We should, however, guard against too much specialisation: there is still room for the general surgeon and consultant physician as distinct from the specialist; there are difficult cases where the broader view is sometimes of value. A special knowledge of dermatology is often useful to the venereologist and vice versa: secondary syphilis has been diagnosed as sulphonamide rash by a dermatologist, and psoriasis has been unrecognised by a venereologist.

Many consultants have a competent knowledge of both specialties. My senior registrar in venereology, holding a joint appointment with another hospital (I understand he is not an applicant for the post in question), has, as a result of the suggestion of a "pure" dermatologist at the selection committee, also worked regularly for three years in the skin departments of both hospitals.

However good the separation of these subjects is in principle, there are exceptions to every rule, and the conditions in East Kent are, in my opinion, an example of one such instance. It is surely better to offer the right man adequate employment so that both specialties are adequately covered, than to appoint two men who might stagnate and find outside interests. Some specialists give much time to committee work or politics: I fail to see why utilising this spare time in another medical interest is a retrograde step.

London W.1. DAVID ERSKINE.

MEDICINE IN THE SOVIET UNION

SIR,—Dr. Fox's broadcast not only raised points of interest with regard to upbringing and its results in the U.S.S.R., but also invites comparison between "planned" methods of training of children and our own "laissez-faire." It may be profitable to consider further the three types of community to which Dr. Soddy refers in his letter of Dec. 25.

Neurosis, in all its manifestations, has a double origin. It arises first from unresolved dissatisfaction in the early parent-child relationship; but its second cause, equally important, is the strain put on the individual by the outside world which makes demands different from his expectations. Fear and dissatisfaction then work on his inner structure and produce the symptoms.

In the wholly planned community the first emotional relationship is likely to be different from ours only in so far as the parents may have more economic security; though perhaps, if the individual fits the ideal picture prevalent in that culture, he will have special reason to feel confident. Any deficiencies in this early relationship, however, may never become manifest, because of the continuity in the framework within which the individual lives. From the earliest age conformity is demanded and security given in return. The love instincts may or may not be satisfied, but the child's hate is distributed on to "others" whom he may indeed be required to hate. Provided he is no rebel—and the large majority of humans are conformists—he need not come into conflict with an outside world which differs from his expectations; and he is thereby saved from neurosis.

In the type of community the U.S.A. represents, the child is reared at first in an intensely individual atmosphere. This is followed (as Dr. Soddy points out) by an equally intense training in group relationship and loyalties. Finally he enters a fiercely competitive workaday world which brings him into conflict both with his early ethical teaching and with his group identifications. This conflict is the crux of the tension and anxiety which is produced.

In our type of morality, the bonds are intense at first, but the group does not wholly replace family influence, nor is the adult world based entirely on competitive "success" values. Nevertheless the individual has almost always had an "imperfect" relationship in the home, and the very looseness of the bonds, and the variety of choices and expectations are also likely to induce conflict. There is a crisis aspect of childbirth—partly economic—which evokes anxiety in many homes. This is transmitted to the child, as well as the uncertainties caused by the absence of a stable broad synthesis. Very few people are able to achieve such a synthesis by the time they are physically fit and able to have children.

During the last 50–70 years our larger ethical framework has collapsed and its collapse has deprived us of pegs on which to hang our standards. It has also led to a piecemeal revision of our methods of upbringing and

education which has put a very great strain on the individual. Though we have advanced beyond the stage where a ready-made pattern, of supposedly universal validity, would satisfy us, we are far from giving the individual the strength he needs to enable him to get satisfaction from his world; nor have we tried to remove inconsistencies from his thorny path, or prepared him from his childhood onwards to meet the world's expectations to the best of his ability. To my mind, this is the explanation of our higher breakdown-rate, which is therefore to some extent preventable. As a nation we are, in the eyes of the outside world, rather more secure than we have been for some time past, and it is now up to us to fit the individual better for his task. In particular, we must enable him to grow up better equipped emotionally and to have continuity in the demands made on him.

Roehampton, London, S.W.15. HEDY SYMONDS.

BED-WEIGHING MACHINE

SIR,—In work on changes in metabolism of water and electrolytes after injury we were concerned with obtaining accurate daily weights of patients, most of whom were bedridden and some of whom were being treated with Sinclair traction apparatus. There was at that time no suitable bed-weighing machine in this country, though a Swedish model had been described [1]; so, while awaiting completion of the Avery (33N) machine described by Darmady,[2] we experimented with a modification of a personal weighing-machine.

A steel trough was attached to the platform to accommodate the two castors of one end of a hospital bed so that each end of the bed could be weighed separately; the end not being weighed was raised with wooden blocks to the level of the platform. The accuracy of this method—and later that of the bed-weighing machine (type 33N)—was tested by repeated weighing of beds with and without occupants. When satisfactory techniques had been established, different patients and beds, with and without Sinclair traction apparatus, were weighed. With both methods of weighing, the beds were lowered to the ground after each observation; in this way each bed was weighed ten times. The accompanying table summarises the results and gives the standard deviations calculated from the serial weighings.

The improvised method was found to be insufficiently accurate for following daily changes in the balance of water, but the bed-weighing machine proved entirely satisfactory for this purpose. It will be seen from the table that with the bed-weighing machine the error is virtually independent of the absolute weight being measured, and that changes of more than about 50 g. based on single readings have less than a 5% chance of being due to error in weighing. Greater accuracy may be obtained if on each occasion the mean of several weighings is taken.

Method	Mean of ten weighings (kg.)			Standard error (g.)	
	Mean total weight	Bed only	Patient only	Single observation	Mean of ten weighings
Improvised bed-weighing machine	144·790	90·430	54·360	± 2896	± 916·4
	151·750	90·540	61·210	± 3280	± 1038·5
	146·400	90·355	56·045	± 3260	± 1031·9
	206·680	140·030	66·650	± 2599	± 822·1
	90·375	90·375	..	± 1616	± 511·4
	81·720	81·720	..	± 1961	± 620·6
	75·676	75·676	..	± 1835	± 580·8
	68·760	68·760	..	± 1629	± 515·6
New bed-weighing machine (type 33N)	192·266	123·486	68·780	± 23·1	± 7·3
	126·544	65·284	61·260	± 27·2	± 8·6
	191·076	121·026	70·050	± 27·8	± 8·8
	227·680	122·260	65·420	± 16·8	± 5·3
	146·142	78·805	67·337	± 27·8	± 8·8
	78·805	78·805	..	± 22·8	± 7·2
	82·644	82·644	..	± 16·8	± 5·3
	72·544	72·544	..	± 16·8	± 5·3

1. Alwall, N. *Acta med. scand.* 1952, **143**, 158.
2. Darmady, E. M. *Lancet*, 1954, ii, 689.

Birmingham Accident Hospital. C. T. G. FLEAR.

RENAL CHANGES IN ECLAMPSIA

SIR,—As a survey, your annotation of Dec. 25 is disappointing because it fails (*a*) to take account of the researches of Oliver [1] and Sheehan [2]; (*b*) to recognise that the release of thromboplastin cannot be an essential ætiological factor in eclampsia; (*c*) to relate Govan's findings to similar findings in cases of hypertension; (*d*) to weigh the evidence which denies the adrenocorticoids a *primary* ætiological importance; and (*e*) to appreciate the rationale of modern therapeutic measures.

In Oliver's original investigation on the kidneys provided by Shaw Dunn [3] from cases of obstetric anuria (including eclampsia), considerable necrosis of the renal cortex, with survival of the juxtamedullary area, was apparent. When the nephron dissection was undertaken, the damage appeared to be due to an altered vascular state rather than to a toxin. Sheehan's extensive series of anuric (including post-eclamptic) kidneys showed lesions which could only have been due to spasm of the intralobular arteries. Thus both these authors attribute the renal condition to ischæmia.

McManus [4] says that in acute hypertension the kidney arteries of interlobar size "show a marked thickening of the intima in a concentric laminated fashion." The glomerulus shows proliferation of epithelium and endothelium, with the proliferated epithelial cells of the visceral layer becoming filled with large colloid droplets, and the tubules are dilated and lined by enlarged cells full of colloid droplets. Govan notes that in eclampsia the afferent glomerular artery shows eccentric subendothelial deposits; there is increased cellularity of the glomerular tufts with formation of droplets in the intercapillary space; and the proximal convoluted tubules show cloudy swelling and contain albuminoid débris. Allowing for differences in interpretation, both these authors seem to be describing much the same condition. If in McManus's cases this was known to be the result of a raised blood-pressure, why should it be attributed to a different cause in Govan's?

There is no evidence that in the 12 pregnant women in Govan's series who were free from eclampsia, hypertension, or renal disease the renal vessels had not during pregnancy been subjected to hypertensive factors which had raised the pressure above its pre-pregnancy level.

As adrenocorticoids have not been demonstrated to increase in amount pari passu with the increase in toxæmia—indeed they actually decrease as pre-eclampsia mounts [5]—it is unlikely that they are primarily responsible for the toxæmic manifestations. Moreover the potassium loss produced by adrenocorticoids, accompanying sodium retention, is absent in pregnancy toxæmia.[6] To induce hypertension the adrenocorticoids require a great excess of sodium, and dietary prophylactic restriction of salt should—at least in theory—deprive them of such an effect. No hormonal hypothesis could explain why the primigravid are peculiarly prone to eclampsia. The toxæmia-like effects which you mention as having been produced in rats by injection of posterior-pituitary extract could well be due to renal ischæmia, which has been shown to occur by Trueta et al.[7]; for, in rats primed with deoxycortone and sodium chloride,[8] similar effects result from injection of renin—a substance proved to provoke cortical ischæmia.[9] Byrom [10] also has produced an eclampsia-like state in rats by inducing renal ischæmia with the Goldblatt clamp.

It is renal ischæmia that the experimental, clinical, and pathological evidence incriminates, and the therapeutic

1. Oliver J., Macdowell, M., Tracy, A. *J. clin. Invest.* 1951, **30**, 1305.
2. Sheehan, H. L., Moore, H. C. Renal Cortical Necrosis and the Kidney of Concealed Accidental Hæmorrhage. Oxford, 1952.
3. Shaw Dunn, J., Montgomery, G. L. *J. Path. Bact.* 1941, **52**, 1.
4. McManus, J. F. A. Medical Diseases of the Kidney. London, 1950.
5. Venning, E. H., Singer, B., Simpson, G. A. *Amer. J. Obstet. Gynec.* 1954, **67**, 542.
6. See *Lancet*, 1953, ii, 121.
7. Trueta, J., Barclay, A. E., Franklin, K. J., Daniel, P. M., Prichard, M. M. L. Studies of the Renal Circulation. Oxford, 1947.
8. Daniel, P. M., Prichard, M. M. L., Ward McQuaid, J. N. *J. Physiol.* 1954, **124**, 106.
9. Gaunt, R., Renzi, A. A. *Ciba Symp.* 1954, **6**, 1.
10. Byrom, F. B. *Lancet*, 1954, ii, 201.

evidence points in the same direction. The success obtained with hypotensive drugs can be explained by their increasing renal blood-flow. Likewise, dramatic improvement in eclampsia occurs when conduction anæsthesia reaches the level of the lesser splanchnic nerve,[11] thereby reducing the nervous impulses responsible for renal ischæmia.

In your leader on anuria (Dec. 11) you have equally overlooked the ætiological significance of the spasm of the renal cortical vessels, although you have indicated its presence in the four clinical types described. This circulatory change in anuria has been combated very successfully by the Dublin school of obstetricians, in a way which incidentally elucidates the pathological changes responsible for anuria. Over the past two years Dr. Feeney [12] and Dr. Barry [13] have demonstrated the value of splanchnic block in incipient and early established anuria complicating concealed accidental hæmorrhage (which you recognise as the most formidable combination of circumstances). They have also lent support to my thesis by recording improvement following rupture of the membranes in that condition.

It will soon, I believe, be clearly evident that eclampsia, and the anuria it produces, are the result of a renal cortical ischæmia provoked by the resistance of the myometrium to stretch.

London, W.1. JOHN SOPHIAN.

MENTAL CHANGES AND ORGANIC DISEASE

SIR,—I have read with interest your annotation of Nov. 13 on this subject.

I would point out that we did not say that the psychiatric diagnosis was abandoned after localised abnormalities had been found in electro-encephalograms. Rather we wished to emphasise the presence of an organic lesion in addition to the psychiatric difficulty. We were, and continue to be, concerned about the numbers of patients who do have organic disorders of the central nervous system and in whom the presenting symptoms are primarily psychiatric.

I am unable to understand the last phrase of your comment: "but its routine use as recommended by Waggoner and Bagchi is likely to give rise to other diagnostic mistakes." Certainly this is not a valid comment if the electro-encephalogram and clinical studies are properly evaluated.

Neuropsychiatric Institute,
University Hospital,
Ann Arbor,
Michigan, U.S.A. RAYMOND W. WAGGONER.

*** It was the likelihood that routine use of electro-encephalography in mental hospitals might *not* always be accompanied by adequate evaluation of clinical and electro-encephalographic studies that gave rise to our comment.—ED. L.

REACTIONS TO IODISED OIL

SIR,—For thirty years, almost every week, I have been doing hysterosalpingograms, probably well over 4000. In 90% of these, iodised oil has been used, in 10% water-soluble dyes. In my own mind I have no doubt that the advantages obtained in the 90% from the point of view of diagnosis and therapeusis, have far outweighed the very small risk of experimental granulomata referred to by Mr. de Boer in your issue of Dec. 25—a condition which I am prepared to admit might occur if the tube be obstructed at the fimbria or ampulla. But should a tube be found so pathologically altered using either solution, I would remind him that the chances of surgical success or natural recuperation are certainly under 15%. Moreover, he will readily recall that it is the very commonest of surgical findings to see the convolutions of a small tortuous hydrosalpinx closely adherent and kinked—properties, of minor obstruction, by no means solely confined to the oviduct of Fallopius.

Those who run fertility clinics are generally agreed that after an intimate history has been taken, a Rubins CO_2 test is the first line of investigation. Only, should this be doubtful or negative, is recourse had to an oil test, for if there is no clinical question, or palpable doubt, that the case is one of primary sterility, or for that matter a clean case of secondary sterility, then I am confident that iodised oil used gently and meagrely, under the keen screen control of a radiologist, is best. Moreover, in such a case I believe it is just because of the nascent iodine that such a technique is so often of great therapeutic value, for it is quite phenomenal to see and hear of the number of patients who have conceived immediately after the use of iodised oil. If, however, there is a history (not so very common these days) of tubal infection or febrile salpingitis, there is perhaps some reason for the use of water-soluble radio-opaque material, though even here the transient, fluffy, smog-like shadows, at the end of the tubes are often difficult to interpret. On many occasions when such cases have failed to conceive, or have undergone further investigation, it has been shown at laparotomy that the tube so happily diagnosed as patent because of an immediate fog of material at its end, is in reality a tube and ovary surrounded by mosquito-curtain-like veils of peritoneum, absolutely inhibiting exit or entry of the ovum.

At the Royal Society of Medicine I was speaking of cornual occlusion of the tube secondary either to criminal abortion, induced abortion, or postpartum infection. Repeated CO_2 and oil tests demonstrate that in 95% of patients giving such clinical histories, where there is no palpable abnormality whatever, the blockage is never beyond the isthmus, but confined to the cornu and interstitial portion of the tubes.

In such cases there is no question whatever that a clean-cut iodised-oil picture is an essential prerequisite to surgical intervention, subsequent operation always demonstrating that the distal portion of the tube is absolutely healthy and therefore readily implantable. Such a picture can never be obtained by the usual hazy dyes, though the new material, 'Salpix,' may prove to be the exception.

London, W.1. V. B. GREEN-ARMYTAGE.

RECOGNITION OF TABLETS

SIR,—Manufacturers might use a system of code numbers to help doctors to identify by sight those tablets they have previously prescribed. A simple system of duplicate records might, however, prove less unwieldy in the long run. It would be virtually impossible to carry any code beyond the range of the proprietary tablets. To consider the extreme case, hospitals now often compress certain tablets to meet their own needs; specially made punches and dies would certainly not be forthcoming to codify such tablets. Moreover, an established drug (for example, phenytoin sodium) will often masquerade as a plain tablet, marked tablet, sugar-coated tablet, or capsule. In such circumstances, the only sure guide is chemical identification.

The scheme of identification I have outlined [1] has been elaborated to meet the needs of a busy hospital, and has proved perfectly workable. It is quite true that "time, care, and some apparatus" are required for the tests—especially care. But, although the reagents are unstable, the components may be stored for a month or more without prejudice to the reactions. Fresh reagents are an important safeguard against false negatives, which would be very misleading. Compound tablets are not quite so baffling as you suggest in your annotation of Jan. 1. The main toxic ingredient can be detected almost invariably within the ten minutes allowed, and the rest of the tablet can then be investigated at greater leisure. As in any simplified scheme, there are notable

11. Hingson, R. A. *Curr. Res. Anesth.* 1947, **26**, 238.
12. Feeney, K. J. *J. Irish med. Ass.* 1953, **32**, 36.
13. Barry, A. P., Geoghegan, F. *Irish J. med. Sci.* May, 1954, p. 189.

1. Cooper, P. *Pharm. J.* 1954, **173**, 481.

lacunæ; for instance, there is no rapid test for the presence of the amphetamine series. Much work remains to be done on the lines suggested in my preliminary investigation. Meanwhile I would urge that casualty-officers suggest to their hospital pharmacist that a chemical identification service be available for any real or suspected poisoning emergency. Where a hospital has no pharmacist, the coöperation of a local chemist might be enlisted.

Pharmaceutical Department,
Southmead Hospital, Bristol. PETER COOPER.

SIR,—We were interested in your suggestion that manufacturers should consider stamping tablets with code numbers. It has long been our practice, and we believe also of some other companies in the industry, to emboss tablets with a distinctive mark. A list of our tablet markings is available on request to any doctor who would like to have it.

There is a feeling amongst some pharmacists that it would be better if tablets were more uniform in size, shape, and colour and if sugar-coated tablets, for instance, were all white. Whilst we believe this might have some advantages to the retail pharmacist, we think it would be less convenient to the medical practitioner. Apart from the urgent problem of identifying a possible cause of poisoning, there are many other occasions when it is useful for a doctor to look at a tablet and to be able to immediately identify it by a mark or other characteristic with which he is familiar.

Bayer Products Ltd.,
Kingston-on-Thames,
Surrey. L. M. SPALTON
Director.

AGAMMAGLOBULINÆMIA

SIR,—I hesitate to prolong this discussion, but I feel I must correct one or two statements made by Dr. Bowley and Mr. Dunsford in their letter of Dec. 11.

They state that no query would have arisen had I advised Dr. Grant and Dr. Wallace that I had used βα in the examination of the group. Yet I did say that Dr. Grant and Dr. Wallace used only part of my report: I had, of course, advised them of my investigation, but they had every right to make use of my report in part or in full, as they thought fit. They emphasised the pathological and clinical aspects of the case, because these were of more general interest than the serological investigations. I assumed (as it turned out, wrongly) that my colleagues would realise that where blood-grouping is performed on many thousands of samples, it is usually done by people who know something of the subject. I am pleased that my findings are now acceptable.

I was not in fact surprised when we found α missing. I suspected some serological abnormalities when Dr. Grant first presented the case at a local scientific meeting, and I therefore asked permission to perform the serological investigation. I am sure Dr. Bowley and Mr. Dunsford are very familiar with the extensive literature on the location of the β and α agglutinins in the plasma, so they will know that these two agglutinins are located in the gamma fraction.[1] I am therefore certain that had they been presented with such a clear-cut case of agammaglobulinæmia, they would not have been surprised at finding serological abnormalities.

Concerning secretion of group-A substance, I did know of the paper by van Loghem [2] to which Dr. Bowley and Mr. Dunsford refer; what I said was not that I could not find any paper which showed that people of these subgroups of A did not secrete group-A substance, but that "I was not able to find any literature supporting their dogmatic statement." The paper by Grove-Rasmussen et al.[3] (which they themselves quote) says that the saliva of the donor K7332 inhibited group-O serum when this was tested against his own cells, which surely means that the donor secreted in his saliva something which, Dr. Bowley and Mr. Dunsford must admit, behaves very much like group-A substance.

1. Payne, R., Deming, Q. B. *J. Immunol.* 1954, **73**, 81.
2. *Vox Sang.* 1954, **4**, 69.
3. Grove-Rasmussen, M., Soutter, L., Levine, P. *Amer. J. clin. Path.* 1952, **12**, 1157.

In their last paragraph they say: "A study of the literature will show there are marked differences between A_1 and A_0." Undoubtedly the literature must be studied; but every scientist should read with discrimination. Uncritical acceptance of everything published often creates confusion worse confounded. I think they will agree that we have had enough of confused terminology in hæmatoserology, and I would therefore refer them to some parts of the literature where these differences do not appear so very marked. For instance, Grove-Rasmussen et al.[3] say: "Dunsford refers to a similar blood studied by Gamelgaard and Marcussen but applied the term A_1 for this type of blood. The term A_0, however, seems preferable because it is more descriptive of its peculiar behaviour with Group O serums. . . ." Again, Race and Sanger in their latest edition of *Blood Groups in Man* say (p. 383): "van Loghem and van der Hart . . . have found three 'A_4' (*synonyms* A_x *and* A_0) children . . ." (my italics).

All this has really nothing to do with the excellent paper by Dr. Grant and Dr. Wallace, and I hope that Dr. Bowley and Mr. Dunsford will agree that this controversy should now end.

Birmingham. W. WEINER.

SHOE DESIGN AND TOE DEFORMATION

SIR,—Professor Haines and Mr. McDougall (Dec. 25) give further proof of the bad design of the footwear of the adult and adolescent. They rightly state that "Ideally all pressure on the toes should be avoided." and it is significant that it is always this feature of design that is the first to be modified or abandoned. *Satra Bulletin*, reporting on the adoption of their "ideally" designed lasts for children, comments [1] that "several firms have adopted lasts modelled by us. Others have requested minor modifications, especially in toe shape."

Professor Haines and Mr. McDougall may be wrong when they say that "the modern male track-runners' spiked shoe has to be somewhat pointed and very tight over the toes to give the grip required." It may indeed be designed in this way and these features may be essential to "fit" that design of footwear; but, I submit, shoes for this purpose should accommodate the feet so that they function as naturally and as efficiently as possible. Observe the feet on the barefoot runner and you will find he seeks the maximum area of contact for his toes, thereby getting the best possible thrust. As I have suggested elsewhere,[2] shoes designed on these lines by adding to the efficiency of the feet might well knock seconds off track records.

Professor Haines and Mr. McDougall also state "the bad design of most shoes for adults . . . must necessarily deform however well-fitted." This statement will appear contradictory to many readers who believe, as I do, that you cannot "fit" a badly designed shoe. The term "fit," however, has become so ambiguous and so widely used by the opponents of shoe reform that its use is dangerous and its meaning capable of gross distortion.

All foot surveys to date have carefully avoided any consideration of shoe design: all faults of design have been included in the classification "a short fit" or "ill-fitting"—which are both terms implying that there is no fault of design but faults of selection by purchaser or retailer.

This of itself may not seem important but, as I have already shown,[3] such things affect Government policy, and a study of the latest report from the Ministry of Education [4] confirms this view. In support of its complacent attitude the Ministry quotes twice on one page references to reports stating there is no correlation between foot deformity and shoe fitting. There is no mention of shoe design nor of the fact that it is impossible to obtain factory-made shoes that will not deform a child of school-leaving age. No doubt many parents were delighted to hear the news given in the report that the

1. *Satra Bulletin*, January, 1954, vol. 6.
2. *J. All Nations' Sports Ass.* 1953, **5**, 5.
3. *Lancet*, 1953, ii, 143.
4. The Health of the School Child. H.M. Stationery Office, 1954.

health of the country's children was everywhere satisfactory; but those of us interested in children's feet find no grounds for satisfaction, and we deplore the present attitude of the Government.

At present no factory-made shoes are available for adults or adolescents that "avoid all pressure on the toes." The shoes available are not only producing much deformity but also preventing correction of existing deformities. Surely this is a matter requiring the urgent attention of the Minister of Health.

London, S.E.15. CHARLES A. PRATT.

SIR,—Having advocated a straight inner border to "protect the great toe from excessive deviation," Professor Haines and Mr. McDougall add "but, unless other adjustments were made to resist it, the pressure on the lateral toes would be unbearable." It may be asked:

(1) Is not any deviation of the great toe excessive?

(2) Why, if the shoe is designed to fit the foot, and pressure therefore taken on the heel and instep, should it be assumed that there is any pressure on the lateral toes—let alone an unbearable one?

(3) Surely, in the sentence containing the words "the bad design of most shoes for adults," *all* should be substituted for *most*?

London, W.8. G. G. SHERRIFF.

PEPTIC ULCERATION IN SOUTHERN NIGERIA

SIR,—The article by Mr. Konstam in your issue of Nov. 20 was of particular interest to me since I have operated on 16 cases of acquired pyloric stenosis in Africans living in the south-east province of Sierra Leone in the past two years. All gave a long history of epigastric pain with symptoms of advancing pyloric stenosis and in the majority the stomach was huge—even in a boy of 8 who was the youngest in my series. All were treated by gastrojejunostomy except one on whom partial gastrectomy was performed.

In their clinical features and the striking success of simple operative measures my cases closely resemble the 20 described by Mr. Konstam. But my operative findings differ significantly. In all my patients there has been a prepyloric mass of granulomatous tissue, often ulcerated in the centre. Smears taken from the surface of this have shown the ova of *Schistosoma hæmatobium* in nearly half the cases and the appearance has resembled the interior of the urinary bladder in advanced bilharzia of that organ. Mr. Konstam's cases revealed a state of chronic duodenal ulceration with extensive adhesions around. My experience has also been that adhesions are very dense and extensive, and involve the pylorus and duodenum with neighbouring organs. On several occasions I have found *S. hæmatobium* ova in these adhesions and in the free peritoneal fluid. There is a close resemblance between the adhesions found in this condition and those seen in bilharzia of the female pelvic organs.

Schistosomiasis is hyperendemic in this region, the disease being either active or latent in almost all the population from the age of five, or even younger, onwards. We suspect that infestation with hæmatobium (far from confining its clinical manifestations to the urinary tract) causes both widespread and serious lesions in many parts of the body. From the few cases of pyloric stenosis I have so far treated it is impossible to draw conclusions, but it is perhaps permissible to suggest that this condition—in this country—is often a late result of a heavy infestation with hæmatobium. It would be interesting to know whether this or other helminths commonly invade the wall of the stomach in the people of Southern Nigeria.

Methodist Hospital, Segbwema, Sierra Leone. J. R. ROSE.

Obituary

CHARLES JENNINGS MARSHALL

M.S., M.D. Lond., F.R.C.S.

Mr. Jennings Marshall, senior surgeon to Charing Cross Hospital, died at his home in London on Dec. 29 at the age of 64.

The son of C. W. Marshall, he was born in Cardiff, and was educated at Cardiff High School. From Charing Cross Hospital Medical School he graduated M.B. with honours in 1912 and was awarded the gold medal of the University of London. After holding house-appointments at Charing Cross he took his M.D. in 1914, and, while holding the post of surgical registrar, the F.R.C.S. in 1915. The following year he gained the degree of M.S. and again carried off a gold medal.

The same year he accompanied his former chief, Sir Herbert Waterhouse, to Petrograd to join the staff of the Anglo-Russian Hospital which had been set up as a gesture of good will to our allies. Jennings Marshall served the hospital as assistant surgeon, and on his return from Russia he joined the R.A.M.C. and was posted to Salonika.

After the war he became assistant surgeon and junior orthopædist at King's College Hospital, but he gave up this appointment when he was elected to the staff of his own hospital. He also joined the staff of the Victoria Hospital for Children, Tite Street, where he had charge of the orthopædic department. For many years he was a surgical consultant to the Ministry of Pensions and to the London County Council. He was an examiner for the universities of London and Manchester. During the late war he was director of the surgical section of the Sutton Emergency Hospital.

As a surgeon his interests and his experience were wide. After the 1914–18 war he continued his work in orthopædics, notably at King's and at Tite Street, and in 1921 he described in our columns with verve and insight the arm-training centre at Roehampton. But he was in fact a general surgeon. Though his monograph in 1938 was entitled *Chronic Diseases of the Abdomen*, he pointed out that in his view the "abdomen extends at least from the knees to the eyebrows." The racy style, based on shrewd observation, was typical of his teaching and his practice. His other writings, in collaboration with colleagues, include *Textbook of Surgical Pathology* and *Textbook of Surgical Anatomy and Physiology*. He wrote less than he might have, but many of his unpublished practical innovations will live in the practice of his students. His friends at the Savage Club will also recall his self-made receiving-sets in the early days of wireless, and his delight in music and the arts.

Mr. Jennings Marshall married Miss Hope Embleton-Smith, who survives him.

HARALD NORRIS WEBBER

M.A., B.Chir. Camb., F.F.A. R.C.S.

Dr. H. N. Webber, consulting anæsthetist to University College Hospital, died in London on Dec. 24 at the age of 73.

The elder son of W. H. Webber, of Brighton, he was educated at Brighton Grammar School and at St. John's College, Cambridge. He continued his medical studies at University College Hospital, qualifying in 1912. On the outbreak of war in 1914 he joined the R.A.M.C., in which he reached the rank of major. While serving in Egypt he nearly died from a severe attack of typhus fever.

After the war he held house-appointments at several London hospitals and he became resident medical officer, first at the West London Hospital and later at University College Hospital. In those days this appointment carried with it the task of administering the anæsthetics for emergencies, and in this way Webber's interest was aroused in the subject which was to become his life's work. In the early '20s he was appointed assistant anæsthetist to the hospital, and towards the end of the late war he reached the position of senior anæsthetist. He also served on the staffs of St. Paul's Hospital and the Royal Hospital for Diseases of the Chest.

His published work included papers, with the late W. H. R. Rivers, on the action of caffeine and alcohol on the capacity for muscular work. He was co-editor, with the late F. S. Rood, of a textbook on *Anæsthesia and Anæsthetics*. He held office as president of the anæsthetics section of the Royal Society of Medicine, and in 1948 he was elected a fellow of the Faculty of Anæsthetists of the Royal College of Surgeons. He was also a senior fellow of the Association of Anæsthetists.

C. W. M. writes: "Webber was a cheerful and reliable colleague, always ready to lend a hand in the working of the hospital, to whose welfare he was wholeheartedly devoted, and in whose service he never spared himself. He could always be counted on to give a safe and skilful anæsthetic. During the late war he was twice bombed out of his home, but he refused to quit London and throughout the blitz he continued to serve in the section of the hospital detailed to attend to casualties. On his retirement from U.C.H. he took over the duties of resident medical officer at St. Luke's Hostel for Clergy, and up to the time of his last illness he gave them unstinted help. To his colleagues he leaves a memory of a lifetime of hard work, well and truly done."

Dr. Webber married Madeleine Mary, daughter of Major J. J. Ryder, who survives him.

ROBERT STIVALA ASPINALL

C.I.E., F.R.C.S.E., Lieut.-Colonel I.M.S. retd

Lieut.-Colonel Aspinall died in a London hospital on Christmas day, at the age of 59. At the outbreak of the 1914-18 war, he was a medical student at Guy's Hospital. He served for a time in the ranks, but later returned to his studies and qualified in 1916. He then took a commission in the R.A.M.C., and he was wounded in action in 1917 while serving as a regimental medical officer in France. In 1922 he joined the Indian Medical Service, and after only two years in the military division of that service he was selected for employment in the foreign and political department, where he spent the rest of his service.

For some years he was the chief official practitioner at Delhi and Simla, the winter and summer capitals of India, and he was a notable success in both appointments. In 1929 he became F.R.C.S.E., and in 1936, while still a major, he was appointed C.I.E. During the greater part of the late war, as residency surgeon, Mysore State, he was stationed at Bangalore, the headquarters of the Southern Army. The enormous increase in the civil and military population of Bangalore greatly added to the clinical and administrative work of this appointment; but Aspinall coped with it all with great skill. Just before the transfer of power in 1947 he was selected for promotion to the post of inspector-general of civil hospitals in the Punjab.

Shortly before his last illness he had remarried and settled in practice in the West End of London. He leaves two sons by a former marriage.

A colleague writes: "Robbie Aspinall was well equipped by nature and study to deal with any professional or social emergency. A clubbable man with a host of friends in London and all over India he will be much missed."

ANDREW DEUCHARS

M.B. Glasg., D.T.M.&H.

Dr. Andrew Deuchars, resident medical officer at Stonehouse Hospital, Lanarkshire, died on Oct. 16. After graduating at the University of Glasgow in 1946, he was house-physician to the late Prof. Noah Morris at Stobhill Hospital, Glasgow. Later he served with the R.A.M.C. in Palestine, East Africa, and Mauritius. In 1949 he became house-physician to Dr. David Smith at the Royal Infirmary, Glasgow, and the following year he took his D.T.M. & H. at Liverpool. In the same year he was appointed junior hospital medical officer at Cleland Hospital, Lanarkshire, and soon afterwards took up his appointment at Stonehouse Hospital.

J. S. C. writes: "When I first met Dr. Deuchars, I was at once impressed by his attentive and thoughtful poise of mind. It was in the clinical realm that I came to know his familiar presence so well and to feel the reinforcement of his able assistance. He was one of those young men who did not fail to appreciate, from the medical standpoint, the full opportunities offered by Service overseas, especially in a tropical zone. A keen observer, he brought home much, to the enhancement of his clinical acumen. During the four years of his appointment at Stonehouse Hospital the full promise of his increasing attainment became manifest. The relief of suffering in the evening hour was a province which was particularly his own, and he was held in high esteem by all those who had known his touch."

Dr. ELIZABETH CASSON

G. de M. R. writes: "The residential clinic which Dr. Casson founded at Dorset House, Bristol, was for patients who were only able to afford modest fees. Later she extended her work by taking on the Mount Pleasant nursing-home at Clevedon, Somerset, so that by the beginning of the war in 1939 she had room for 100 patients. Owing to bombing, she moved the Dorset House clinic to Clevedon, using two more houses. Here, she continued the principle of low fees and at times admitted patients without charge. She spent little on herself, and she financed the Dorset House School of Occupational Therapy in its beginning. Indeed many years passed before it was able to run at its efficient level without financial help from her."

Births, Marriages, and Deaths

BIRTHS

MORRIS.—On Dec. 11, to Joan Ellen (née Bassett), wife of Mr. J. Morris, F.R.C.S.—twins (Caroline Melanie and Nicolas Alderbury).

WOLFF.—On Dec. 15, at the Whittington Hospital, London, N.19 to Catherine, wife of Dr. Frederick Wolff—a son (Peter).

MARRIAGES

MULCAHY—HANTON.—On Dec. 30, at the Church of the Immaculate Conception, Wexford, Risteárd Mulcahy, M.D., M.R.C.P., to Aileen Hanton.

Appointments

ALDERS, NICHOLAS, M.D. Vienna, F.R.C.S., M.R.C.O.G.: part-time consultant obstetrician and gynæcologist, Bournemouth and East Dorset group of hospitals.

BAINBRIDGE, CYRIL, O.B.E., K.B. Durh., D.P.H.: S.A.M.O., Eastern R.H.B., Dundee.

COPE, D. H. P., M.B. Lond., F.F.A.R.C.S.: consultant anæsthetist Middlesex Hospital, London.

DAWSON, MARJORY A., M.B. Glasg., D.P.H.: deputy M.O.H., Hackney.

JONES, E. D., M.B. Lond., D.M.R.T.: asst. radiotherapist (S.H.M.O.), Royal Marsden Hospital, London.

LEIPER, JOHN, M.B.E., M.B. Lpool, D.P.H.: deputy county M.O., West Riding of Yorkshire.

MCLAUCHLAN, G. P., M.B. Edin., D.C.H., D.P.H.: deputy M.O.H. and school M.O., Exeter.

REID, J. E., M.B. Belf., F.F.A.R.C.S., D.A.: consultant anæsthetist, Belfast H.M.C.

TAYLOR, JAMES, O.B.E., M.B. Glasg., D.P.H., D.T.M. & H.: asst. M.O., area No. 1 (Blaydon), M.O.H., urban districts of Blaydon, Ryton, and Whickham, co. Durham.

WHITTLES, J. H., M.D., B.SC. Lond. D.P.H.: deputy county M.O. and deputy principal school M.O., Trowbridge, Wilts.

WILSDON, R. B. N., M.D. Lond., M.R.C.P.: consultant chest physician, Middlesbrough tuberculosis administrative area.

North East Metropolitan Regional Hospital Board:

EMERY, E. W., M.B. Brist., F.F.R., D.M.R.T.: consultant radiotherapist, North Middlesex Hospital and annexes.

MCKENDRICK, G. D. W., M.A., B.M. Oxfd, M.R.C.P.: part-time consultant physician in infectious diseases, St. Ann's General Hospital.

NAIRN, C. G., M.B. Glasg., F.R.C.S.E., M.R.C.O.G.: part-time consultant obstetrician and gynæcologist, Prince of Wales's and Bearsted Memorial hospitals.

RUSSELL, ALEXANDER, O.B.E., M.D. Durh., M.R.C.P., D.P.H., D.C.H.: part-time consultant physician in paediatric endocrinology, Queen Elizabeth Hospital for Children.

TURK, K. A. D., M.D. Lond.: whole-time consultant pathologist, Chelmsford group.

Birmingham Regional Hospital Board:

CAPE, R. D. T., M.D., B.SC. Edin., M.R.C.P.E.: whole-time asst. chest physician (S.H.M.O.), Dudley and Stourbridge group.

GROVES, J. S., M.B. Leeds, F.R.C.S., L.O.M.S.: part-time consultant ophthalmologist, Coventry group.

HARRINGTON J. A., M.A. Camb., M.D. Lond., D.P.H., D.P.M., D.I.H.: whole-time consultant psychiatrist, Winson Green Hospital and Ufficulme Early Treatment Hospital.

SPRINGETT, V. H., M.D. Lond.: whole-time consultant chest physician, Birmingham (sanatoria) group and Birmingham City Council.

YOUNG, H. B., M.B. Glasg., F.R.C.S.E., F.R.F.P.S., D.P.H.: part-time consultant surgeon, Wolverhampton group.

Notes and News

OXFORD PLANS

As the first half of their master plan for the development of the Radcliffe Infirmary site, the board of governors of the United Oxford Hospitals on Dec. 29 approved plans to provide more accommodation for the Medical School of the University.

The board have agreed to provide 50 beds and laboratory accommodation on the Infirmary site for the Nuffield professor of medicine; 40 to 50 beds and laboratories for the Nuffield professor of surgery; enlarged and more suitable accommodation and workshops for the professor of anæsthetics; 25 beds and laboratories for a new regius professor of medicine, who will be a clinician; a new biochemistry department; considerable extensions to the pathology laboratories; and a small extension for the department of radiology.

The Ministry of Health have approved this whole plan in principle and the first part of it in detail, and are prepared to make a financial contribution. The cost of these buildings will be more than £400,000, and something over £200,000 will come from university sources.

The second half of the master plan, which has also been approved in principle by the Ministry of Health, gives much-needed additional wards and departmental extensions. The university has agreed to give the same wholehearted support to the rest of the plan (though it cannot give financial support) as it has given to the first instalment for the benefit of the medical school. The board and the university are well satisfied with these joint arrangements and are grateful to the Ministry of Health for their interest and support.

ACCOMMODATION FOR HOSPITAL STAFF

A Ministry of Health memorandum to hospital authorities [1] remarks: "It has been represented to the Minister in the course of discussions he has had about the current shortage of junior hospital medical staff that the provision of more residential accommodation by hospital authorities would contribute to the solution of this problem." The memorandum observes that the powers to provide residential accommodation, conferred by the National Health Service Act, are only ancillary to the main duty of providing hospital services; and so these powers can appropriately be exercised only when this is essential to the proper conduct of the service. Secondly, it is not necessarily in the interests of the staff themselves that they should live in accommodation provided by the hospital authority for hospital staff only. Thirdly, in view of limitations on capital expenditure, as little money as possible should be devoted to acquiring or building residential accommodation. Accordingly, hospital authorities should consider providing residential accommodation, whether by purchase, lease, conversion, new building, or the allocation of existing accommodation, only: (1) where the staff in question must, by the nature of their duties, live on or near the hospital; or (2) where the hospital is remote from any housing development and no other suitable accommodation is obtainable in the locality. Where these criteria are satisfied, married quarters may also be provided for married staff. Whether or not these two criteria are satisfied, hospital authorities can help staff to get houses, flats, or rooms in other ways, including: (*a*) approaches to local housing authorities and other landlords, to obtain sympathetic consideration of requests by the staff in question for rented accommodation; and (*b*) maintaining a list of suitable flats, &c., for the information of those who need accommodation.

SOME SHELTERED WORKSHOPS

AT Newhaven, on the hill once justly, no doubt, called Mount Pleasant (but now covered with steep haphazard untidy little streets) is Searchlight, a sheltered workshop for the severely handicapped, which has lately come of age.[2] Searchlight takes its name from an old Army searchlight station, set up to defend us against the Zeppelins of the 1914–18 war. It owes its rebirth to an enterprising member of the nursing profession, Miss Muriel Powell, who is still at its head.

Miss Powell had been matron at the marine branch of the Heritage Craft School, at Tidemills, and had seen the cheerful crippled children pass out of her care to become—once the excitement of their homecoming was past—a burden on their families, or inmates of chronic wards. She decided, if she could, to change that; and in 1933, with three pioneer crippled boys, she walked into the small bungalow she had taken to launch her venture. She found three things waiting for her: a telegram of good wishes, a letter advising her not to put all her eggs into one basket, and a steak-and-kidney pudding. It was the letter that went into the basket—the waste-paper basket. The other offerings, too, were dealt with appropriately. Since that day the bungalow has developed into a group of large and well-equipped workshops flanked by dormitories, recreation rooms, cottages for staff, kitchens, and a big dining-hall which was added only last year. The three pioneers were the forerunners of 44 men so severely handicapped that they are not employable in ordinary industry, and hence do not qualify for the disabled persons' register.

In the early days Searchlight men made sweets and jam; but just as a flourishing business was being built up, along came the 1939–45 war, to kill it stone dead with rationing. Fortunately some new lines of work—wooden-toy making, carpentry, and boot-repairing—were already being tried; and presently weaving, leather-work, and soft-toy making were added. The labour of running the place in war-time was particularly arduous. At one time Miss Powell, as the only able-bodied person in the place, had to lift the more helpless men out of their beds into Morrison shelters when the sirens went at night, and back again at the "all clear." With the return of peace she extended the work, and had the good fortune to gather some keen and capable staff about her.

There had been financial struggles from the start. When her own capital ran out she was able to get local authorities to pay £1 a week maintenance grant for each man; and when this proved too little she started a farthing fund. There have also been donations from friends, funds collected at a "Searchlight week" in Newhaven, and raised by special efforts, and—in recent years—donations from large voluntary funds and some commercial firms. The aim has always been to make Searchlight ultimately self-supporting; but the overhead costs of such a venture are high, and in the meantime it needs the full support of its friends.

Not long ago the Central Council for the Care of Cripples published a survey[3] of sheltered workshops and home industries run by their member organisations in south-east England. Besides Searchlight, the workshops include Cripplecraft at Herne in Kent, Hostels for Crippled and Invalid Women in south-east London, Queen Elizabeth's Training College for the Disabled at Leatherhead, the School of Stitchery and Lace at Bookham Grange, the Woodlarks' Workshop at Farnham, and the Yately Textile Printers in Hampshire. At Cripplecraft, which is not a training centre but mainly occupational, the work done includes soft-toy making, basketry, chair caning, and woodwork; Queen Elizabeth's Workshop specialises in floral pottery, and Yately in block-printing of textiles by hand; Bookham Grange and the Hostels for Crippled Women do fine needlework, embroidery, and some dressmaking; and Woodlarks produces wooden toys. There are home-industry schemes at Brighton, Hove, Chichester, Croydon, and Kingston-on-Thames, which in July, 1953 (when the survey was made), were providing work for 575 men and women. The work includes glove and slipper making, knitting, soft-toy making, weaving, netting, embroidery, basket work, chair caning, woodwork, and a number of other crafts.

Miss Norah Hill, who made the survey, comments that new legislation has led to an increasing awareness of the needs of the physically handicapped without, so far, the development of any increased provision to meet these needs. There has, however, been a great growth of friendly feeling, she finds, between Government departments, local authorities, and voluntary associations. The local authorities have recognised that most voluntary bodies working for the disabled, "far from being inefficient, do the same job at less cost because they are able to keep down the overheads." As a result, nearly all local authorities have now increased their grants to the voluntary bodies on whom they depend for services. The prospects of setting up more residential sheltered workshops are poor at present, but she thinks it might be possible to experiment further with non-residential work centres for small groups.

Eli Lilly Medical Research Fellowship

Applications are invited before April 15 from doctors registered in South Africa for this fellowship (250 dollars a month) for study in the United States. Further details can be had from Dr. H. A. Shapiro, P.O. Box 7605, Johannesburg.

1. H.M.(54)115.
2. The Story of Searchlight. Searchlight Cripples Workshops, Mount Pleasant, Newhaven, Sussex. 1954. Pp. 33. 2*s*. 6*d*.
3. Some Notes on Sheltered Workshops and Home Industries for the Seriously Disabled in South-east England. Central Council for the Care of Cripples, 34, Eccleston Square, London, S.W.1. Pp. 31. 3*d*.

University of Cambridge

The following degrees were recently conferred:

M.D.—J. J. Fleminger.

B.Chir.—Inez R. Aldous, William Atherton, D. W. Atkinson, I. H. Backhouse, J. W. Blaxhill, L. H. Blonstein, J. N. Bodger, W. R. P. Bourne, P. J. Burrows, J. R. Burwell, S. T. G. Butterworth, P. G. T. Bye, D. H. Cameron, T. R. Clendon, W. L. Cordeaux, P. D. Crockatt, J. A. Dryden, John Fairley, I. McL. Flowers, J. S. Garfield, E. F. D. Gawne, R. H. S. Gibbs, J. N. Godlee, Claudia M. B. Grigson, L. H. Hurrell, R. D. Hyde, A. C. Johansson, P. J. D. Kirk, A. H. Labrun, I. V. Longfield, J. S. Miller, R. C. Nainby-Luxmore, W. S. Ogden, D. B. R. Osbourne, A. M. Parfitt, R. J. C. Pearson, D. J. H. Prosser, Edward Redfearn, C. F. Ridley, I. R. Robertson, M. S. Robson, Ian Ross Russell, C. E. Salter, Rudolph Schram, G. C. Spackman, G. F. W. Swan, M. J. Turner, J. F. Walker.

M.B.—S. G. Bayliss, G. F. B. Birdwood, D. J. Buttery, W. H. Carling, John Crook, R. H. Gibbon, J. T. Gibbs, J. W. Harding, G. H. Hilton, Harold Jacobs, R. J. Knight, R. C. Lawson, S. P. Lock, C. M. McGregor, H. C. Masheter, Lucy M. Rochelle, J. K. Snell, I. G. Tait, D. E. Tunnadine, P. D. W. Wickenden, W. A. Williamson, J. R. Wood.

University of London

The title of professor of zoology has been conferred on Mr. G. P. Wells, SC.D., in respect of his post at University College, London.

On Dec. 15 the degree of M.D. was awarded to P. J. Hare.

University of Glasgow

The University, with the Western Regional Hospital Board, has appointed Dr. A. C. Forrester to the senior lectureship in anæsthetics which has been set up within the St. Mungo department of surgery at Glasgow University and Glasgow Royal Infirmary. The appointment carries the clinical ranking of consultant.

Dr. Forrester is chairman of the anæsthetic services subcommittee of the Central Consultants and Specialists Committee (Scotland). He is a consultant anæsthetist at Glasgow Royal Infirmary, with which he has been associated for the past 18 years. During that time he has shared in the teaching of anæsthetics to students and post-graduates. Dr. Forrester has interested himself in the early introduction of curare into anæsthesia, and circulatory changes during anæsthesia. He has visited many other departments of anæsthesia in this country and abroad, spending some time in the U.S.A. and Canada.

Dr. R. C. O. Saunders has been appointed assistant to the senior lecturer in anæsthetics.

Royal College of Surgeons of England

Normally admission to the Hunterian festival dinner is by invitation, but this year it will be held for the first time in the new great hall of the college, and it will be possible to admit, on payment, up to 100 fellows and members. Those who wish to attend the dinner, which is to be held on Feb. 14, should write immediately to Mr. W. F. Davis, deputy secretary of the college, Lincoln's Inn Fields, London, W.C.2, enclosing a cheque for £2 15*s.* to cover the inclusive cost of the dinner.

International College of Surgeons

The college offers a fellowship of $3000 to a young graduate in medicine from a European or South American country.

The scholarship is for travelling expenses and maintenance for twelve months. Before it can be confirmed, candidates must secure an appointment as a resident or fellow for one year of study and graduate work in one of the teaching centres in the United States or Canada. Further particulars may be had from Dr. J. F. Brailsford, 20, Highfield Road, Edgbaston, Birmingham, 15.

Royal Society of Medicine

The W. J. Harrison prize in laryngology has been awarded to Mr. C. P. Wilson, and in otology to Miss M. R. Dix. The Norman Gamble prize has been awarded to Mr. J. C. Seymour, and a Norman Gamble research grant of £100 has been made to the Institute of Laryngology and Otology.

The next award of the William Gibson research scholarship for medical women (£200 p.a.) will be made in July 1955. Further particulars may be had from the secretary of the society, 1, Wimpole Street, London, W.1.

Nuffield Dental Fellowships

One of the aims of these fellowships is to enable graduates in medicine and science to qualify themselves to undertake teaching and research on dental health and disease. Further particulars will be found in our advertisement columns.

Royal Statistical Society

Study Circle on Medical Statistics.—On Wednesday, Jan. 12, at 6 P.M. at the E.L.M.A. Lighting Service Bureau, 2, Savoy Hill, London, W.C.2, Mr. R. H. Thouless, SC.D., will deliver a lecture on Statistics in Parapsychology.

Not Enough Nurses

Owing to shortage of nurses (says the *Richmond & Twickenham Times* of Dec. 18) 47 beds have been closed at the Normanfield Mental Hospital, Teddington. Because of strain on the staff only medium-grade and high-grade patients will be admitted in future. For some time past only low-grade children have been admitted and many of these have placed a heavy burden on the staff. The Hon. John Fremantle, the chairman of the North West Metropolitan Regional Hospital Board, said that the staff situation at other mental and mental-deficiency hospitals was also critical. Fifty-six Italian nurses, he added, had been recruited for two hospitals.

CORRIGENDUM: *The Design of Clinical Experiments.*—This lecture by Dr. D. D. Reid, which was one of a series on the Scientific Basis of Medicine, delivered by various speakers at the invitation of the British Postgraduate Medical Federation, was given at the London School of Hygiene and Tropical Medicine—not, as we stated in a footnote (Dec. 25, p. 1293), at the Postgraduate Medical School of London.

Archivos de Neurobiologia.—This Spanish journal for neurology, psychiatry, and child psychiatry, which was founded in 1919 by Ramon y Cajal and ceased publication during the civil war, has been started again. Dr. B. Llopis, director of the neuropsychiatric hospital in Madrid, is editor-in-chief, and Dr. F. Pollak, 17, Lansdowne Road, Hove, 2, is on the editorial board.

The address of the British Tuberculosis Association is now 59, Portland Place, London, W.1 (tel. Museum 3810).

Diary of the Week

JAN. 9 TO 15

Tuesday, 11th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. G. B. Dowling: Scleroderma and Dermatomyositis. (Watson Smith lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. Joseph Bamforth: Early Beginnings of Carcinoma. (Imperial Cancer Research Fund lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry and Neurology.* Prof. Alfred Meyer: Temporal-lobe Epilepsy and the Hippocampal Region. Dr. C. M. Whitty: Cingulectomy. Dr. H. Hassler (Freiburg): New Method of Stereotactic Brain Surgery. (Film demonstration.)

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Dr. P. L. Mollison: The Rhesus Factor.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. R. G. Cochrane: Leprosy.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7.) Sir Charles Petrie, Mr. E. D. O'Brien: Problems of Modern Diplomacy.

MANCHESTER MEDICAL SOCIETY
8 P.M. (Medical School, Manchester.) *Surgery.* Mr. D. W. Purser: Calcinosis Circumscripta. Mr. J. K. Wright: Acrylic Replacement of Bone.

Wednesday, 12th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. Hugh Burt, Dr. Donald Wilson, Dr. C. E. Quin: Hydrocortisone.

MIDLAND MEDICAL SOCIETY
8.15 P.M. (Birmingham Medical Institute, 154, Great Charles Street, Birmingham, 3.) Dr. Robert Forbes: Recent Developments in Medical Litigation.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Medicine and Pathology.* Prof. C. H. Gray: Clinical Studies of Urinary Adrenal Steroids.

Thursday, 13th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Mr. C. P. Wilson: Lateral Cysts and Fistulæ of the Neck of Developmental Origin. (Hunterian lecture.)

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Dr. A. A. Mason: Use of Hypnosis in Skin Disorders.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Orthopædic Hospital, Oxford
8.30 P.M. Major L. C. Hollister, jun.: Internal Splinting of Fractures.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. Robert Kemp, Dr. I. Harvey Flack: Medical Education of Patient and Public.

UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee
5 P.M. Dr. T. Cecil Gray: Anæsthesia in the Age of Stress.

Friday, 14th

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Cochrane: Leprosy.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow
5 P.M. Mr. Arthur Jacobs: Surgical Approach in Surgical Pathology of the Kidney.

Saturday, 15th

BIOCHEMICAL SOCIETY, King's College, Strand, W.C.2
2 P.M. Scientific Papers.

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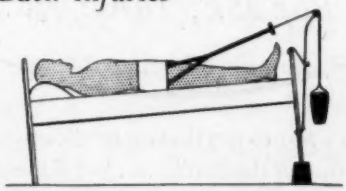

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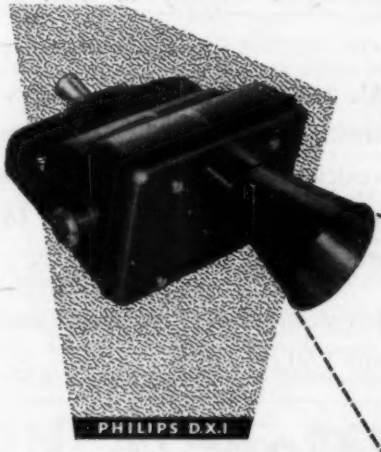

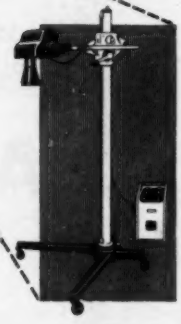

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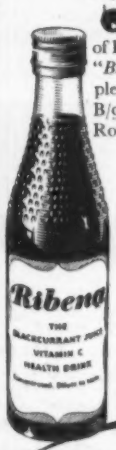

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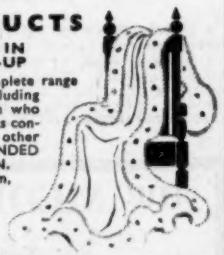

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

GRAHAM MACGREGOR BULL, Esq., M.D., F.R.C.P., will deliver the GOULSTONIAN LECTURES on TUESDAY, 18TH JANUARY, and THURSDAY, 20TH JANUARY, 1955, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "The Uræmias."

Any member of the medical profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

BRITISH POSTGRADUATE MEDICAL FEDERATION UNIVERSITY OF LONDON

"THE SCIENTIFIC BASIS OF MEDICINE"
1954–1955
SECOND TERM: JANUARY–MARCH, 1955

The following lectures, which are designed especially for research workers and specialists in training, will be delivered at The London School of Hygiene and Tropical Medicine, Keppel-street, W.C.1, on TUESDAY and THURSDAY afternoons at 5.30 P.M. during the second term of the session 1954–55. Admission free, without ticket.

Date	*Lecturer*	*Title*
January		
Thurs. 13th	Professor Sir RUDOLPH PETERS, M.A., M.D., D.SC., F.R.C.P., F.R.S. (Oxford)	Medical Significance of Biochemical Lesions
Tues. 18th	Dr. DOUGLAS MCCLEAN, M.B., B.S. (Lister Institute)	Substances that Increase Tissue Permeability and their Relation to Infection and Fertilisation
Thurs. 20th	Dr. D. G. MELROSE, B.M., B.CH. (Postgraduate Medical School of London)	Cooling of the Whole Organism
Tues. 25th	Dr. JANET VAUGHAN, O.B.E., D.M., F.R.C.P. (Oxford)	Radiation Effects on Bone
Thurs. 27th	Professor C. H. GRAY, D.SC., M.D., M.R.C.P., F.R.I.C. (King's College Hospital Medical School)	The Chemistry of the Porphyrias
February		
Tues. 1st	Dr. E. F. GALE, SC.D., F.R.S. (Cambridge)	Actions of Antibiotics on Bacteria
Thurs. 3rd	Professor P. B. MEDAWAR, D.SC., F.R.S. (University College, London)	Tissue Transplantation Immunity
Tues. 8th	Professor J. R. SQUIRE, M.D., F.R.C.P. (Birmingham)	Correlation between Laboratory and Clinical Findings in Hypersensitivity
Thurs. 10th	Dr. T. S. WORK, D.SC., PH.D. (Medical Research Council)	Protein Biosynthesis
Tues. 15th	Professor J. N. DAVIDSON, M.D., D.SC. (Glasgow)	Nucleoproteins in Cell Structure
Thurs. 17th	Professor J. H. GADDUM, SC.D., F.R.S. (Edinburgh)	The Effects of Alcohol
Tues. 22nd	Professor A. C. FRAZER, D.SC., PH.D., M.D., F.R.C.P. (Birmingham)	Fat Metabolism
Thurs. 24th	Dr. R. A. KEKWICK, D.SC. (Lister Institute)	The Plasma Proteins
March		
Tues. 1st	Dr. C. H. ANDREWES, M.D., F.R.C.P., F.R.S. (Medical Research Council)	The New Look in Virus Research

BRITISH ASSOCIATION OF PHYSICAL MEDICINE

A WEEKEND COURSE IN PHYSICAL MEDICINE will be held on 29TH and 30TH JANUARY, 1955.

Further details can be obtained from the Honorary Secretary of the Association, 45, Lincoln's Inn-fields, London, W.C.2.

THE NUFFIELD FOUNDATION

FELLOWSHIPS AND SCHOLARSHIPS IN DENTISTRY

The Nuffield Foundation invites applications, from citizens of the United Kingdom, for Fellowships and Scholarships in Dentistry. To help the advancement of teaching and research on dental health and disease, the Foundation is prepared to award a number of Fellowships:

(i) to enable selected men and women with dental qualifications to receive such additional training in pure and applied science as is desirable to fit them for an academic career in dentistry (but not to obtain a medical qualification), and:

(ii) to enable selected university graduates in medicine and science to receive training that will qualify them to undertake teaching and fundamental research on dental health and disease.

The Foundation is also prepared to award a limited number of Scholarships to assist students of outstanding ability attending a university dental school to devote 1 or 2 years to further studies of the basic sciences.

Applications for Fellowships should be received by 1st March annually and for Scholarships by 30th June annually. Copies of the conditions of both Fellowships and Scholarships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY R.C.P. AND S.ENG.

A COURSE OF INSTRUCTION IN RADIOTHERAPY will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 4TH APRIL, 1955. This will continue until the end of January, 1956, after which students must still spend a further 15 months working either in the Holt Radium Institute or in another approved hospital. Inclusive fee £52. There may be appointments under the National Health Service at Senior House Officer or Registrar level for successful candidates. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery. Further information may be obtained from the Director, Holt Radium Institute, Wilmslow-road, Manchester, 20.

Applications must be sent to the Dean of Postgraduate Medical Studies, University of Manchester, not later than Monday, 21st February, 1955. All applicants will be required to attend for interview.

A SYMPOSIUM ON THE MODERN ASPECTS OF LIVER AND BILIARY DISEASE

will be held at

THE POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London from 28TH MARCH–1ST APRIL, 1955

The programme will consist of lectures, demonstrations of biochemical, pathological and radiological techniques, presentation of cases and question and answer discussions. It is limited to a maximum of 40 and will be designed for Consultants wishing to study recent advances in the diagnosis and management of liver and biliary diseases.

Registration fee only (3 guineas) for incidental and social expenses.

Apply before 19th March for further information and places to the Dean, Postgraduate Medical School, Ducane-road, London, W.12.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3 months course of post-graduate surgery suitable for surgeons requiring a refresher course in the current outlook on general surgery or for graduates preparing to specialise in surgery, starts on 21ST MARCH and 26TH SEPTEMBER, 1955. The programme has been reorganised so as to provide coördinated clinical and systematic instruction in general surgery wards and specialised surgical units in Edinburgh. Fee £31 10s.

MEDICAL SCIENCES

A 3 months course in applied anatomy, physiology, pathology, bacteriology and biochemistry will begin on 27TH JUNE, 1955. This course is suitable for post-graduates wishing to take the Primary Fellowship Examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

2 courses in the Basic Sciences (anatomy, physiology, pathology, including bacteriology) will be conducted by the Fellows of the Royal College of Surgeons and others, under the ægis of the Edinburgh Post-Graduate Board for Medicine. These courses, comprising lectures and demonstrations, will begin on 14TH FEBRUARY and 24TH OCTOBER, 1955, and continue for 10 weeks. Fee £26 5s.

INTERNAL MEDICINE

Courses lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begin on 28TH MARCH and 26TH SEPTEMBER, 1955. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations and ward visits. Fee £31 10s.

Additional instruction in clinical pediatrics is arranged in conjunction with the course in medicine for which there is a small fee; the numbers are limited.

Applications for enrolment should be addressed to the Director of Post-Graduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and post-graduate experience.

BRITISH POSTGRADUATE MEDICAL FEDERATION AND EMPIRE RHEUMATISM COUNCIL

DEMONSTRATIONS for Consultants on MODERN ASPECTS OF RHEUMATIC DISEASE will be held at The Arthur Stanley Institute, Middlesex Hospital, and The Postgraduate Medical School, London. 24TH–26TH MARCH, 1955.

The programme will include lectures, demonstrations, and discussions on modern methods of investigation and treatment.

The course will be limited to 40 persons. No fees. Closing date for application 1st February, 1955.

Application for places and detailed programme from the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

MAKERERE COLLEGE, The University College of East AFRICA. Applications are invited for post of FIRST ASSISTANT IN SURGERY. Duties similar to those of a Senior Registrar or Registrar at a Teaching Hospital in Britain. Salary in scale £1254–£1950 p.a. depending on qualifications and experience. Temporary cost-of-living allowance 10% of basic salary (maximum £162 p.a.). Child allowance £50 p.a. per child (maximum £150 p.a.). F.S.S.U. Partly furnished accommodation at rent between £45 and £85 p.a. (including basic furniture). Free passages for member of staff and family (up to 4 adult passages), on appointment, termination and leave (every 2 years). Exceptionally, appointment might be offered to applicant prepared to spend 1 year only in the post.

Applications (6 copies), giving full details of qualifications and experience, and naming 3 referees, to be received by 26th January, 1955, by Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, London, W.C.1, from whom further particulars may be obtained.

L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 14th February, 14th March, 12th April, 1955. MEDICINE, PATHOLOGY, 21st February, 21st March, 18th April, 1955. MIDWIFERY, 22nd February, 22nd March, 19th April, 1955. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

INSTITUTE OF CARDIOLOGY. (British Postgraduate MEDICAL FEDERATION, UNIVERSITY OF LONDON.) (Associated with the National Heart Hospital, Westmoreland-street, W.1.) Applications are invited for the post of ASSISTANT DIRECTOR (full-time). Salary scale corresponding to that of Reader (£1500–£100–£2000) with family allowances and superannuation under the F.S.S.U. Duties will consist of research, teaching, and care of beds and an outpatient clinic. The appointment will be for 3 years in the first instance, subject to annual confirmation, and may thereafter be renewed by annual reappointment.

Further information may be obtained from the Dean at 35, Wimpole-street, W.1, to whom applications, together with the names of 3 referees, should be sent not later than 30th January, 1955.

UNIVERSITY OF ALEXANDRIA. Faculty of Medicine. Applications are invited for the post of PROFESSOR OF DENTAL ANATOMY AND HISTOLOGY in the Dental School. The candidate must be a registered dental practitioner of standing in the profession, must have been qualified for 18 years at least, have had teaching experience in the subject in a university or a recognised institute for not less than 8 years, must have occupied the post of Assistant Professor for at least 5 years, and be interested in pathology and histopathology and have published notes on same. Preference is given to candidates who have published papers on dental anatomy, dental histology, dental pathology and dental histopathology.

(*a*) Contract is for 2 years renewable. (*b*) Medium of lecturing is English. (*c*) Salary 1500–1700 Egyptian pounds inclusive of high cost of living. A total deduction due to income tax is about 9%. (*d*) The University will pay travelling expenses to Egypt on presentation of official receipts as well as expenses of homeward journey at the termination of the contract period for both candidate and family. (*e*) A vacation of 2 months is granted annually.

Applications should be addressed to the Dean, Faculty of Medicine, University of Alexandria, Egypt, and should include particulars as to academic qualifications, experience, and publications, together with the names of 3 referees, and should be received not later than 31st January, 1955.

Hospital Services: Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT PSYCHOTHERAPIST (4 half-days a week), Portman Clinic, 8, Bourdon-street, W.1. Duties mainly concerned with adolescent and adult delinquents and social problem cases. Some evening sessions. Research interests and experience of analytic and group therapy will be an advantage. Clinic may be visited by direct appointment.

Applications by 7th February, 1955.

(2) CHILD PSYCHIATRIST (Senior Hospital Medical Officer), 6 half-days a week, Child Guidance Clinic, 58, Hampton-road, Twickenham. Clinic may be visited by appointment with Area Medical Officer, Elmfield House, High-street, Teddington.

Applications by 11th February, 1955.

(3) Whole-time ASSISTANT PHYSICIAN in Physical Medicine, Medical Rehabilitation Centre, Camden-road, N.W.1. The Centre is designed for outpatient rehabilitation of the long-term traumatic case, and conservation of function in chronic disorders. Applicants should be experienced in rehabilitation. Salary £1500 (unless below age 32)–£1950. Centre may be visited by direct appointment.

Applications by 9th February, 1955.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a superannuable post of ASSISTANT SENIOR MEDICAL OFFICER at a salary of £1550–£75(4)–£100(1)–£1950. The successful applicant will be required to undertake duties under the direction of the Senior Administrative Medical Officer. Experience in general medical administration is essential.

Applications, giving particulars of qualifications and experience, together with the names of 3 referees, should be addressed to the Senior Administrative Medical Officer, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, by 31st January, 1955. Envelopes should be marked "A.S.M.O."

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a CONSULTANT ANÆSTHETIST (part-time, 9 notional half-days a week) at the Greenwich and Deptford Group of hospitals. Candidates must have had wide experience in anæsthetics and hold the qualification of D.A. or F.F.A.R.C.S. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 22nd January, 1955.

CHARING CROSS HOSPITAL, W.C.2. First Assistant (non-resident) in the Radiotherapy Department. Tenable for 1 year. Salary within the scale £1400–£1950 p.a.

Further particulars and application forms (to be returned by 22nd January, 1955) obtainable from the undersigned.

FRANK HART, Secretary to the Board.

CHARING CROSS HOSPITAL, W.C.2. Part-time ASSISTANT SURGEON (Consultant). 4 sessions per week. Applicants should be General Surgeons with special training and experience in thoracic surgery.

Candidates, who must be Fellows of the Royal College of Surgeons of England, should submit 12 copies of their applications, stating date of birth, qualifications and experience, and the names of 3 referees, to reach the undersigned by 24th January, 1955. FRANK HART, Secretary to the Board.

QUEEN MARY'S HOSPITAL, Roehampton, London, S.W.15. CONSULTANT in Pathology. Applications are invited for this whole-time appointment. Candidates should possess wide experience in all branches of pathology. The appointment is subject to the terms and conditions of the National Health Service. Further information concerning this post can be had on application to the Medical Superintendent.

Applications (9 copies), stating nationality, date of birth, qualifications, experience, present appointment(s), and the names of 3 referees, should reach Ministry of Health, Hospital Management Branch, Norcross, Blackpool, Lancashire, by 29th January, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT NEUROSURGEON for new unit at Preston Royal Infirmary. Appointee in addition to organise head injury service in northern part of Region and to undertake psycho-surgery at 2 large mental hospitals. Must live near Preston. Wide experience essential. 24th January, 1955.

(*b*) Additional maximum Part-time CONSULTANT THORACIC SURGEON to serve northern part of Region, based on Victoria Hospital, Blackpool (Non-tuberculous and Cardiac Unit), High Carley Sanatorium, near Ulverston, and Wrightington Hospital (tuberculous), near Wigan. Wide experience essential. Must reside within reasonable distance of Blackpool. 27th January, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

OXFORD. THE UNITED OXFORD HOSPITALS. The RADCLIFFE INFIRMARY. Applications are invited for the post of CONSULTANT in the Department of Pathology. The successful applicant will have the duties of Assistant Pathologist in the Department of Morbid Anatomy. The post is full-time and candidates must hold a higher medical qualification.

Applications (12 copies), stating age, qualifications and experience, with the names of 3 referees, should be addressed to the undersigned, from whom further particulars can be obtained, to reach him by 22nd January, 1955.

E. J. R. BURROUGH, Administrator.

The Radcliffe Infirmary, Oxford.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT RADIOLOGIST required for approximately 7 notional half-days per week for the Chesterfield Group and 2 per week for the Mansfield Group of hospitals.

Further details and application form from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 5th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT CHEST PHYSICIAN for duties in the Thoracic Surgery Unit at Mearnskirk Hospital, Renfrewshire. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT PATHOLOGIST based at the Royal Infirmary, Glasgow, for duties at Law Hospital, Lanarkshire. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT ANÆSTHETIST based at the Royal Infirmary, Greenock. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of ASSISTANT ANÆSTHETIST at the Western Infirmary, Glasgow, and Associated Hospitals, and the Royal Hospital for Sick Children, Glasgow. The appointment may also include duties in Dunbartonshire. The appointment is part-time remunerated on the basis of 8 notional half-days per week. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT CHEST PHYSICIAN for duties in the Thoracic Surgery Unit and in the Pulmonary Tuberculosis Wards at Hawkhead Infectious Diseases Hospital, Paisley. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a CONSULTANT ANÆSTHETIST to the Dartford, Kent, Group of hospitals. Choice of whole-time service or the maximum number of part-time sessions will be offered. Candidates must have had wide experience in Anæsthetics and hold the qualification of D.A. or F.F.A.R.C.S. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 22nd January, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointment of CONSULTANT in Diseases of the Chest to the Hastings Group of hospitals. The appointment will carry the clinical charge and medical superintendence of Darvell Hall Sanatorium, Robertsbridge, which provides 120 Beds for male and female tuberculous patients. Candidates should have had wide experience in general medicine and in diseases of the chest and the possession of a Diploma of Membership of a Royal College of Physicians is essential. A house will be available. Candidates may visit the Hospital concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 22nd January, 1955.

WELSH REGIONAL HOSPITAL BOARD. Consultant ANÆSTHETIST to serve Glantawe Hospital Management Committee. Based at Llanelly Hospital. Successful candidate required to reside in Llanelly area. Candidate should possess F.F.A.R.C.S. Optional whole-time or maximum part-time appointment.

Applications (12 copies) to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

CANADA. ST. JOSEPH'S HOSPITAL, Chatham, ONTARIO, CANADA. Position vacant—MEDICAL DIRECTOR of Pathological Laboratory wanted (160 beds). Monthly salary on percentage basis.

If interested please apply for particulars and submit credentials to Administrator.

NEW ZEALAND. WAIKATO HOSPITAL BOARD, HAMILTON, NEW ZEALAND. Applications are invited from qualified medical practitioners of the British Empire, possessing a Diploma in Diagnostic Radiology, for the position of ASSISTANT RADIOLOGIST. Salary in accordance with the hospital employment regulations and within the range of £NZ1353–£NZ1653 p.a. for a Junior Specialist and £NZ1753–£NZ2253 p.a. for a Senior Specialist. Conditions of appointment, accompanying explanatory memorandum and form of application obtainable from the High Commissioner for New Zealand, 415, Strand, London, W.C.2, quoting reference No. 3/6/19 and mentioning this journal.

Completed applications close in New Zealand on 11th March, 1955, and must reach the High Commissioner's Office, London, not later than 25th February, 1955.

Hospital Services : Junior Appointments

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER (pre-registration), required in Orthopædic Department. Appointment for 6 months from 16th February, 1955.

Applications, with 2 testimonials, to Medical Director by 15th January, 1955.

GREENWICH AND DEPTFORD AND SEAMEN'S HOSPITAL GROUPS. SENIOR HOUSE OFFICER in Pathology required for duties in the above Groups. Resident on premises or in immediate neighbourhood. Tenable for not less than 1 year.

Applications, stating age, qualifications and previous experience, with names of 2 referees, on or before 15th January to the undersigned, who will supply further particulars and make appointments for candidates to visit laboratories.

F. A. LYON, Secretary.

Dreadnought Seamen's Hospital, Greenwich, S.E.10
(Tel. GRE 3433).

HOSPITAL FOR WOMEN, Soho-square, W.1. (Affiliated to the Middlesex Hospital.) Applications are invited for a full-time post of RESIDENT SENIOR GYNÆCOLOGICAL HOUSE OFFICER, vacant on 1st April, 1955. Appointment is for 6 months but the holder can apply for an extension of 6 months. Salary in accordance with the terms laid down for medical and dental staffs, less a deduction of £125 p.a. for residential emoluments. The appointment is recognised for the M.R.C.O.G. examination.

Applications, stating age, nationality, qualifications, and experience, supported by the names and addresses of 2 referees, must reach the undersigned not later than Wednesday, 19th January.

D. C. EMERY, Secretary.

EASTMAN DENTAL HOSPITAL AND INSTITUTE OF DENTAL SURGERY (UNIVERSITY OF LONDON), Gray's Inn-road, W.C.1. Applications are invited for the appointment of ANÆSTHETIST in the grade of Registrar from 1st April, 1955.

Application forms are obtainable from the Director, to whom they should be returned by 7th February, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st March, 1955. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 12th January, 1955.

HACKNEY HOSPITAL, London, E.9. (842 Beds.) OBSTETRIC HOUSE SURGEONS required as under :—

(*a*) From 17th February (pre-registration).
(*b*) From 1st April (not pre-registration).

Posts recognised for M.R.C.O.G.

Apply Group Secretary, above address by 19th January.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12.

NON-RESIDENT CASUALTY OFFICER (Senior House Officer grading) required for 6 months commencing 1st March.

RESIDENT HOUSE SURGEON (radiotherapy) required 1st March. This post offers opportunities for attending the general surgical postgraduate teaching.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 17th January.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE PHYSICIAN, vacant on 1st February, 1955.

Application forms from the Physician-Superintendent at the Hospital (enclosing stamped addressed envelope).

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Tuberculosis Dispensary at the Hospital. Experience in diagnosis and treatment of tuberculosis essential.

Applications, stating age, qualifications with dates, and previous appointments held with copies of 3 testimonials, should be sent to the undersigned by 22nd January, 1955.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON JEWISH HOSPITAL, Stepney Green, London, E.1. (130 Beds.) HOUSE PHYSICIAN (pre-registration or first, second, or third) required for 6 months commencing 3rd February, 1955.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy). Vacant 15th January, 1955.

Applications, with copies of testimonials, to the Medical Director.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of REGISTRAR (Accident Officer) in the Orthopædic Department. Appointment for 1 year at the Middlesex Hospital and a second year at the Luton and Dunstable Hospital under the control of the North West Metropolitan Regional Hospital Board.

Forms of application obtainable from the Deputy Superintendent should be returned, naming 2 referees, by 19th January.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of Locum REGISTRAR in Department of X-ray Diagnosis for period ending 28th February.

Applications should be submitted to Deputy Superintendent as soon as possible.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE SURGEON (pre-registration, or first, second, or third). Required for duty on 1st February, 1955.

Application forms obtainable from Physician-Superintendent, to be returned by 19th January, with copies of not more than 3 testimonials.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT HOUSE PHYSICIAN (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior House Officer. The appointment will be for 6 months.

Applications, with names of 3 referees, to be sent to the undersigned not later than 22nd January, 1955.

H. EWART MITCHELL, Secretary.

The National Hospital, Queen-square, W.C.1.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN (Junior grade), vacancy 1st February.

Applications, stating age and qualifications, with 3 testimonials, to the House Governor before 18th January.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and **BANSTEAD WOOD, SURREY.** HOUSE OFFICER. This appointment will be made for 2 periods of 6 months commencing 1st March, 1955. First appointment as House Physician and second as House Surgeon and Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road and should be returned with copies of not more than 3 testimonials on or before 17th January, 1955.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER (Male or Female), graded Senior House Officer, at Banstead Wood, to become vacant 1st March, 1955. Candidates must have had experience in the treatment of sick children. The appointment will be for 1 year.

Application forms may be obtained from the Secretary at Hackney-road and should be returned with copies of not more than 3 testimonials not later than 17th January, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. HOUSE SURGEON (Male or Female; pre-registration; first or second post) for 6 months commencing 11th February, 1955.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 15th January, 1955.

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for the 2 posts of HOUSE SURGEON (resident). Salary £525 p.a. The posts are tenable for 6 months from 13th February.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent not later than Friday, 14th January.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, W.6. RESIDENT SURGICAL REGISTRAR vacancy on 28th February, 1955. Gross salary £850 (residential emoluments of £130 deductible).

Please state age, qualifications, past and present appointments, and include 2 recent testimonials and the names of 2 referees. Applications should reach the Secretary and House Governor (from whom further information may be obtained) on or before 17th January, 1955.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (post-registration post). Applications are invited for a 6-months appointment as from 1st February, 1955, with salary and conditions as laid down for House Officers in the terms and conditions of service in the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty), with copies of 1–3 recent testimonials, should be sent to the House Governor immediately.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL AND THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of REGISTRAR. Considerable clinical experience in general surgery and in this specialty is required. The appointment will be in accordance with the terms and conditions of service in the National Health Service.

Applications, giving full information and the names of 2 referees, should be sent to the House Governor without delay.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL AND INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of SENIOR REGISTRAR with effect from 1st March, 1955. The appointment will be for an initial period of 1 year, subject to annual re-election thereafter up to the maximum permissible term in this grade and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants must have had considerable experience in general surgery and in this specialty and hold a higher surgical qualification.

Applications should give full information as to qualifications and experience, and the names of 2 referees, and should be sent, in duplicate, to the House Governor before 30th January.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. Applications are invited for the post of SECOND RESIDENT ANÆSTHETIST (Senior House Officer grade), vacant mid-February, 1955. Appointment recognised for D.A.

Applications to be sent to the Hospital Secretary by 21st January, 1955.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. (279 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR required at above Hospital, vacant 1st April, 1955. M.R.C.O.G. desirable. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Royal Northern Hospital, London, N.7, by 18th January, 1955.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (46 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER. 2 posts vacant mid-January, recognised for F.R.C.S. 6 months appointments and may be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of Whole-time SENIOR REGISTRAR in the Department for Nervous Diseases; preference will be given to candidates having some experience of this specialty. The appointment is for a first period of 12 months subject to annual re-election; the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 26th January, 1955.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of MEDICAL OFFICER in charge of the Follow-up Department. The duties will consist of coördinating a record of the work on cancer treated in the Hospital, and to carry out such research work as may be approved by the Governors. Candidates should have held a clinical appointment of Registrar status. The appointment will be on the part-time basis of 6 sessions per week, and the salary will be related to the full-time scale of £1100–£100–£1400. The appointment will be made for 1 year in the first instance.

Applications, together with the names of 2 referees, should be submitted to the undersigned within 10 days from the appearance of this advertisement.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of HOUSE PHYSICIAN (general), pre-registration, commencing 1st February.

Applications, stating age, qualifications, experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary immediately.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOS-PITALS, W.C.2. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Peter's Hospital on 1st April, 1955. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 5th February, 1955.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy for a HOUSE PHYSICIAN (Senior House Officer) to the Neurological and Neurosurgical Department on 1st April, 1955.

Further particulars and form of application, which must be returned not later than Monday, 31st January, 1955, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers:—

2 HOUSE PHYSICIANS on 15th April, 1955.
1 HOUSE SURGEON on 15th April, 1955.

Further particulars and form of application, which must be returned not later than 31st January, 1955, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THORPE COOMBE MATERNITY HOSPITAL, Wal-thamstow, E.17. (54 Beds.) Applications are invited from medical Women for the post of JUNIOR OBSTETRIC OFFICER (graded House Officer), vacant 28th February, 1955. The Hospital is recognised by the Royal College of Obstetricians and Gynæcologists.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of REGISTRAR in the Dermatological Department.

Applications, with names of 2 referees, to Administrator and Secretary by 19th January, 1955.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of SENIOR REGISTRAR in the Radiotherapy Department.

Applications, with names of 2 referees, to Administrator and Secretary by 19th January, 1955.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident) to the Anæsthetic Department from 1st March, 1955.

Applications, with names of 2 referees, to the Administrator and Secretary by 19th January, 1955.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, W.1. Applications are invited for the full-time non-resident post of REGISTRAR (neurology). Post tenable for 1 year in first instance and renewable subject to review. Duties include assisting the Physicians in both the Inpatient and Outpatient Departments, acting as senior member of the Junior Medical staff, and supervising the House Physicians (Senior House Officers).

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 22nd January, 1955.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited for the post of HOUSE PHYSICIAN at above Hospital, which is now vacant.

Application forms from the Hospital Secretary to be returned within 10 days of the appearance of this advertisement.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL REGISTRAR required at the above Hospital. Post is recognised for surgical training for Final Fellowship examination. Post vacant 22nd January, 1955.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 19th January, 1955.

WOOLWICH GROUP HOSPITAL MANAGEMENT COM-MITTEE. SENIOR HOUSE OFFICER (anæsthetics). 2 posts vacant 21st February at Memorial Hospital, Woolwich, and at St. Nicholas Hospital, Plumstead. Recognised for F.F.A.R.C.S. and D.A. 6 months appointments and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ABERDARE GENERAL HOSPITAL, Aberdare. (102 Beds.) MERTHYR AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER. Vacancy 1st February, 1955. Duties include those in general surgery, general medicine, gynæcology, obstetrics, and pædiatrics. Salary £745 p.a., less emoluments.

Applications, stating age, qualifications, &c., together with copies of 2 recent testimonials, to Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

ASCOT. HEATHERWOOD ORTHOPÆDIC HOSPITAL. (212 Beds—Adults and Children.) ORTHOPÆDIC REGISTRAR (resident) required at above Hospital. Hospital a regional centre for all general orthopædic conditions, including fractures; there is also a large amount of outpatient work. Post recognised for F.R.C.S. Candidates may visit Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 23rd January.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Special Departments (E.N.T., pædiatrics, ophthalmology, &c.). 6 months appointment, vacant 1st March, 1955, or earlier.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (Male) for general surgical duties. 6 months appointments: (1) vacant on 1st March, 1955; (2) on 8th March, 1955. Preference given to pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD.

SENIOR HOUSE OFFICER (or REGISTRAR if suitably qualified) in General Medicine required.

SENIOR HOUSE OFFICER (general surgery) required.

SENIOR HOUSE OFFICER (obstetrics and gynæcology) required. Recognised for M.R.C.O.G.

Apply, stating age, nationality, qualifications and experience, with copies of 2 references, to Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE SURGEON at above Hospital. The post is recognised for pre-registration purposes and under F.R.C.S. regulations.

Applications, stating age, qualifications and experience with 3 testimonials, should be forwarded to Group Secretary, Bath Hospital Management Committee, Manor Hospital, Bath, by 13th January, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD.
Stoke-on-Trent Hospital Management Committee, Princes-road, Hartshill, Stoke-on-Trent

(*a*) REGISTRAR in Pathology for City General Hospital (845 Beds). Resident. Laboratory recognised for Diploma in Pathology. Excellent experience in specialty available.

(*b*) Whole-time REGISTRAR in Thoracic Surgery for Stoke-on-Trent Group of hospitals. Duties at Cheshire Joint Sanatorium (305 Beds) and North Staffordshire Royal Infirmary (475 Beds). Experience general surgery essential, higher surgical qualification an advantage.

Application form from Group Secretary, to be returned before 24th January, 1955. Candidates may visit hospitals.

BIRMINGHAM (SANATORIA) GROUP HOSPITAL MANAGEMENT COMMITTEE. YARDLEY GREEN HOSPITAL—THORACIC SURGICAL UNIT. Applications are invited for the post of SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience. The appointment will give broad opportunities for experience in both tuberculous and non-tuberculous thoracic surgery.

Applications, stating age, qualifications, training and experience, together with copies of 3 recent testimonials, should be addressed to the Secretary, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. The following resident appointments are available for the 6-months period commencing 7th January, 1955. Recognised for pre-registration students but registered medical practitioners may apply.

The Queen Elizabeth Hospital

HOUSE SURGEON to the Neurosurgical Department.
HOUSE SURGEON to the E.N.T. Department.

The General Hospital

HOUSE SURGEON to the Gynæcological Department.
HOUSE SURGEON to the E.N.T. Department.

Forms of application may be obtained from the undersigned.

G. A. PHALP,
Secretary and Principal Administrative Officer,
The United Birmingham Hospitals.

Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar), vacant on 1st February, 1955, for 1 year. Candidates should have held house appointments and had surgical experience. Preference will be given to applicants who hold a higher qualification. Deduction of £150 from salary for residential emoluments.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 24th January, 1955. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of NON-RESIDENT REGISTRAR in Neurosurgery (Registrar grade). Candidates must be registered medical practitioners and have held a resident appointment. Previous experience in neurosurgery will be an advantage, and preference given to those holding a higher surgical qualification.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. SENIOR HOUSE OFFICER in Infectious Diseases. The Hospital serves a wide area and gives excellent opportunities for study of infectious diseases. Part of the Hospital is being developed as a general hospital, where further experience can be gained.

JUNIOR HOSPITAL MEDICAL OFFICER for Infectious Diseases. Post vacant 1st February, 1955. Previous experience in infectious diseases desirable.

Applications to Physician-Superintendent.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE SURGEON (general surgery—72 Beds). Vacant mid-January, 1955.

Apply, naming 2 referees, to—

K. G. T. LUXFORD, Esq., Secretary/Finance Officer.
The General Hospital, Bishop Auckland.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery at the Royal Victoria Hospital, Boscombe, Bournemouth, consisting of 494 Beds which includes 64 orthopædic beds. There is a large Outpatient Department covering both traumatic and non-traumatic orthopædics in all branches in children and adults. The post is non-resident and is tenable for 2 years in the first instance.

Forms of application obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 8 days of the appearance of this advertisement.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (non-pre-registration). The post becomes vacant on 15th March, 1955, and is for duties at Alderney Hospital, Parkstone, and Poole General Hospital. Resident at Alderney Hospital.

Applications to the Hospital Secretary, Poole General Hospital, Longfleet-road, Poole.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (non-resident), orthopædic and casualty combined. The post, which becomes vacant on 2nd February, 1955, is recognised for the F.R.C.S. examination and is tenable for 12 months.

Applications to the Deputy Hospital Secretary.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmology), vacant now. Recognised for D.O.M.S. and F.R.C.S. Salary according to Whitley Council (M.D.B.) rates.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. HOUSE SURGEON required in the E.N.T. Department of the above Group, vacant in March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, age, and qualifications, and naming 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Regional Neurosurgery Department. Vacant shortly. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications, quoting 2 referees, to the Secretary, Frenchay Hospital, quoting N.S.F.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Pathology required 1st March, 1955, at Frenchay Hospital (513 Beds—General Medicine, General Surgery and Thoracic, Neurosurgical and Plastic Units for the South West). Post may be resident or non-resident but residence essential when on call. It provides training in all branches of clinical pathology and laboratory is recognised for Diploma in Pathology. Some duties in connection with the Regional Blood Transfusion Service.

Detailed applications, quoting 2 referees, should reach the Group Secretary, Frenchay Hospital, Bristol, by 22nd January, 1955.

BROMLEY HOSPITAL, Bromley, Kent. Officer-in-CHARGE Casualty Department (Senior House Officer) required for 6 months from 31st January, 1955. Recognised by Royal College of Surgeons. Salary £745 p.a., less £150 p.a. board-residence.

Apply, stating age, qualifications with dates, previous experience, and naming 3 referees, to Administrative Officer.

BURTON-ON-TRENT GENERAL INFIRMARY. Resident ANÆSTHETIST (Junior Hospital Medical Officer). Non-resident considered. Recognised for the F.F.A.R.C.S.

Applications to Group Secretary.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) HOUSE SURGEON (casualty and orthopædics), vacant 2nd March, 1955. Recognised for 6 months casualty training for Final F.R.C.S. examination and for Pre-registration Service. Main duties in the Casualty and Orthopædic Departments. This is a busy general hospital with a large Outpatient Department and the post provides excellent opportunities for gaining experience.

Application, with references, to the Hospital Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. CLINICAL PATHOLOGIST (Senior House Officer grade). Resident or non-resident, with duties mainly at Bury General Hospital. The post affords opportunities for gaining experience in all branches of pathology.

Apply, stating nationality, qualifications, &c., and names of 2 referees, to H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (285 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR. Post recognised for D.A. and provides wide experience. A furnished flat is available outside the Hospital. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 24th January, 1955. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 28th February, 1955. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 22nd January, 1955. Interviews 1st February, 1955.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER (E.N.T. Department) for 6 months from 25th January. Recognised Pre-registration Service (surgical).

Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to the Secretary as soon as possible.

CARLISLE. CUMBERLAND INFIRMARY. Applications are invited for the following appointments which are for a 12 months period.

1 SENIOR HOUSE OFFICER (general surgery).
1 SENIOR HOUSE OFFICER (orthopædic and fracture).
1 SENIOR HOUSE OFFICER (specials—eye and E.N.T.).

Applications, stating age, and giving details of education, training and experience, together with the names of 2 referees, should be sent to the Secretary as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

Essex County Hospital, Colchester (188 Beds)

HOUSE OFFICER (surgical), first, second, third, or pre-registration post; tenable for 6 months.

Black Notley Hospital, Braintree, and Essex County Hospital, Colchester

HOUSE SURGEON, first, second, third, or pre-registration post; tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

CROWTHORNE, BERKSHIRE. BROADMOOR INSTITUTION. (920 Beds.) BOARD OF CONTROL. SENIOR REGISTRARS at above Institution for persons of unsound mind of criminal tendencies. Applicants must be registered medical practitioners. Appointments on National Health Service conditions of service and superannuation regulations. Furnished quarters or house on estate available at appropriate charges.

Applications, stating name, date, and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments, and names of 3 referees, to Medical Superintendent, Broadmoor Institution, Crowthorne, Berks, by 29th January, 1955. Envelope to be marked A/SR. Canvassing in any form leads to disqualification. Candidates may visit Institution by appointment with Medical Superintendent.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required immediately. Senior House Officer or House Officer (Intern grade). Post recognised for F.R.C.S. for pre-registration internship. Preference will be given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

OLIVER PLUNKETT, Physician-Superintendent.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.)
HOUSE PHYSICIAN required mid-January. Recognised for pre-registration purposes.
2 HOUSE SURGEONS required mid-January. Posts recognised for Pre-registration Service and F.R.C.S. training.
CASUALTY OFFICER required mid-January. Recognised for pre-registration purposes.

For interview please apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 9th January and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL, London-road, CHELMSFORD. (163 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration post), to work in the general medical wards of the above Hospital. Duties will commence 25th January.

Applications, with copies of 2 recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHEPSTOW. CHEST UNIT, MOUNT PLEASANT HOSPITAL. (150 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER and SENIOR HOUSE OFFICER (resident, or non-resident locally) required. Some previous experience in tuberculosis desirable for Junior Hospital Medical Officer, but not Senior House Officer who will receive a thorough training in the specialty. A new Thoracic Unit is now opening; medical and surgical duties are included in both appointments. Senior Hospital Medical Officer also resident.

Write, quoting 2 referees, to—

T. A. JONES, Group Secretary,
64, Cardiff-road, Newport, Mon.

DERBY. CITY HOSPITAL. (254 Beds.) Sheffield Regional HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (396 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Post becomes vacant 4th March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (pre-registration) or SENIOR HOUSE OFFICER (general surgery), vacant immediately.

Apply, stating full details, to Hospital Secretary.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 20th February, 1955.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 22nd January, 1955.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer grade) for duties in the Area Laboratory and at other hospitals in the Group. The Area Laboratory is recognised for the Diploma of Pathology of the Royal Colleges of Physicians and Surgeons. Further information can be obtained from the Senior Pathologist. Appointment tenable for 1 year.

Applications, with the names of 2 referees, to the Group Secretary immediately.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 1st February, 1955. Pre-registration post. Recognised for F.R.C.S.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, should be sent immediately to Group Secretary at above address.

EPSOM, SURREY. WEST PARK HOSPITAL (for all stages of nervous and mental disorders). WEST PARK HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Psychiatry at above Hospital. Candidates may be of either sex. Single residential quarters are available.

Applications (5 copies) should be made on forms to be obtained from the Secretary to the Hospital Management Committee at the Hospital, to whom they should be returned not later than 21st January.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (with duties as Senior House Officer to the Neurologist). Vacant 15th February, 1955.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 22nd January, 1955.

FRODSHAM. LIVERPOOL HOSPITAL, Kingswood, FRODSHAM, CHESHIRE. (132 Beds.) Applications are invited from registered medical practitioners for the position of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, which is for the treatment of pulmonary tuberculosis. Salary in accordance with the national scale—viz., £775–£50–£1075 p.a., less deduction for residence. Resident accommodation for a single person, or house if married.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, should be forwarded to—

Dr. G. S. ERWIN, Physician-Superintendent.

GOODMAYES HOSPITAL, Goodmayes, Ilford, Essex. Locum Tenens SENIOR REGISTRAR in Psychiatry required for Mental Hospital situated within easy reach of centre of London. Temporary post, resident or non-resident. There are opportunities for wide experience in psychiatry.

Applications, stating age, experience, and qualifications, to the Physician-Superintendent as soon as possible.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 26th January, 1955.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

HAILSHAM, SUSSEX. HELLINGLY MENTAL HOSPITAL. HAILSHAM HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER. Single residential accommodation available. Salary £775 p.a., rising by annual increments of £50 to £1075 p.a.

Applications, stating age, qualifications, and appointments held, to the Medical Superintendent, Hellingly Hospital, Hailsham, Sussex.

HARROGATE AND DISTRICT GENERAL HOSPITAL. (253 Beds. Recognised for D.Obst.R.C.O.G.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER for the Gynæcological and Obstetrical Departments. Vacant 1st February, 1955. Salary in accordance with the National Health Service scale.

Applications as soon as possible to the Hospital Secretary.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Pre-registration post, vacant 10th February, 1955. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (499 Beds.) HOUSE PHYSICIAN (resident) for pædiatrics and general medicine (post-registration), vacant now. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. Senior House OFFICER (obstetrics), Male or Female, resident. 40-bedded unit. Post, recognised for D.Obst.R.C.O.G., vacant 6th February. National scale salary.

Apply to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (medical). Salary £425, £475, or £525 p.a., according to experience (plus special grant of £50 p.a.), less £125 p.a. for residential emoluments.

Applications, stating age, qualifications, experience and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £425, £475, or £525 p.a., according to experience (plus special grant of £50 p.a.), less £125 p.a. for residential emoluments.

Applications, stating age, qualifications, experience and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer). Post vacant 1st February, 1955.

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary.

HEREFORD GENERAL HOSPITAL. (154 Beds.) HOUSE OFFICER (pædiatrics) required immediately.

Applications, with copies of 2 recent testimonials, to the Secretary, Hospital Management Committee, County Hospital, Hereford.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post), to commence 21st January, 1955. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence mid-January, 1955.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (General—705 Beds.) SENIOR REGISTRAR in Department of Anæsthetics. Resident or non-resident. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middx., by 17th January.

HORNCHURCH, ESSEX. ST. GEORGE'S HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (resident) required early in January, 1955, at this Hospital which accommodates 339 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required immediately. Pre-registration or post-registration. 6-monthly term; counts towards the D.C.H. qualification. Salary according to national scale.

Send replies, with testimonials, to the Hospital Secretary.

KIRKCALDY GENERAL HOSPITAL. (74 Beds.) House OFFICER required as at 1st February, 1955. The post qualifies for pre-registration.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty on 1st February, 1955. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee,
The Royal Infirmary, Huddersfield.

ILFORD AND BARKING GROUP HOSPITAL MANAGE-MENT COMMITTEE. ILFORD ISOLATION HOSPITAL, Grove-road, CHADWELL HEATH, ESSEX. There is a vacancy for the position of RESIDENT MEDICAL OFFICER (chest diseases) (Junior Hospital Medical Officer status) at the above Hospital of 75 Beds. Salary £775 (for an officer appointed not less than 2 years after registration as a medical practitioner)–£50–£1075 p.a. The Officer appointed would be expected to work under the general direction of the Chest Physician, Ilford, and to undertake some duties at Ilford Chest Clinic as may be directed by the Chest Physician.

Applications, stating age, qualifications, and previous experience, together with recent testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary.
King George Hospital, Ilford.

IPSWICH. EAST SUFFOLK AND IPSWICH HOS-PITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 25th January, 1955. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to the Hospital Secretary.

ISLE OF THANET HOSPITAL MANAGEMENT COM-MITTEE.

General Hospital, Ramsgate (101 Beds)
HOUSE SURGEON.
General Hospital, Margate (132 Beds)
HOUSE SURGEON.

Approved pre-registration posts. Salary at the rate of £425–£525 p.a., according to experience, less £125 for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary of appropriate hospital.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. (1142 Beds.) SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE PHYSICIAN required on General Medical Unit (67 Beds), and large outpatient clinics.

Applications, stating age, nationality, qualifications obtained with copies of up to 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 18th January, 1955.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. (1142 Beds.) SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required on General Surgical Unit (approximately 68 Beds) and large outpatient clinics. Post vacant 9th February, 1955.

Applications, stating age, qualifications, previous experience and enclosing up to 3 testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 18th January, 1955.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (anæsthetics). Post recognised by the Faculty of Anæsthetists.

Applications, stating age, nationality, qualifications, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 18th January, 1955.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Duties in the Hull A, B and East Riding Groups. Recognised for the F.F.A.R.C.S. Duties may include thoracic anæsthesia (non-resident).

General Medicine

Duties at the Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and the Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at Royal Bath Hospital, Harrogate.

Obstetrics and Gynæcology

Duties at hospitals in Wakefield A and B Groups (with occasional duties in Pontefract and Goole Groups) (non-resident). Offers good experience but is not at present recognised by the R.C.O.G. for membership purposes. Aggregate of 120 obstetric and 50 gynæcological beds.

Orthopædic Surgery

(*a*) Woodlands Orthopædic Hospital, Rawdon (100 Beds), and Orthopædic Outpatient Department, Bradford Royal Infirmary. Offers excellent training in all branches of accident and orthopædic surgery. May be non-resident.

(*b*) Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

(*c*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (34 orthopædic beds) (non-resident).

Psychiatry

Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency Colonies (aggregating 780 Beds) (non-resident). Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 13th January, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Medical Act, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration House posts will be available for the 6 months commencing 1st February, 1955, in the following hospitals approved under the Medical Act, 1950.

City Hospital, York (178 Beds)
1 General Surgical.
1 Surgical (general surgery and gynæcology).
Both recognised for F.R.C.S.

County Hospital, York (222 Beds)
1 Medical.
1 Surgical (ophthalmology).

Hull Royal Infirmary (Sutton) (218 Beds)
2 General Surgical (recognised for F.R.C.S.).

Western General Hospital, Hull (543 Beds)
1 Medical.
1 Surgical (general surgery and radiotherapy).
1 Surgical (gynæcology).

Westwood Hospital, Beverley (202 Beds)
1 General Surgical.
1 Surgical (orthopædic). Recognised for F.R.C.S.

East Riding Hospital, Driffield (249 Beds)
1 Medical (general medical, pædiatric).
1 Surgical (general surgery, gynæcology, E.N.T.). Recognised for F.R.C.S.

Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery, gynæcology). Recognised for F.R.C.S.

General Hospital, Wakefield (158 Beds)
1 Midwifery.

Pinderfields Hospital, Wakefield (663 Beds)
1 General Surgical.

Staincliffe General, Dewsbury (314 Beds)
1 Medical (general medical, dermatology). Vacant 1st March, 1955.
1 Medical (general medical, pædiatric).

Huddersfield Royal Infirmary (304 Beds)
1 Medical (general medical, pædiatric).
1 Medical. Vacant 1st March, 1955.
1 Surgical (general surgery, orthopædic). Recognised for F.R.C.S.

Royal Halifax Infirmary (301 Beds)
1 Midwifery (recognised by R.C.O.G.).
1 General Surgical (recognised for F.R.C.S.).

Halifax General Hospital (425 Beds)
1 Medical.
1 Medical (pædiatric).
2 General Surgical (recognised for F.R.C.S.).

Bradford Royal Infirmary (507 Beds)
1 General Surgical. Vacant 19th March, 1955.
1 General Surgical (recognised for F.R.C.S.).

St. Luke's Hospital, Bradford (828 Beds)
2 Medical.
1 Medical (general medical and dermatology).
2 General Surgical.
1 Surgical (orthopædic, casualty).
All surgical posts recognised for F.R.C.S.

Keighley Victoria Hospital (144 Beds)
1 Medical (general medicine, pædiatric, dermatology).
1 Surgical (general surgery, gynæcology, E.N.T.). Recognised for F.R.C.S.

St. James's Hospital, Leeds (1539 Beds)
1 Medical (geriatric).

Harrogate General Hospital (249 Beds)
2 Medical.

Candidates should express, where applicable, their preference for medical, surgical or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, or from the Dean, School of Medicine, Thoresby-place, Leeds, 2, and should be returned to either of the above-named as soon as possible. Application may be made in advance of results of final examination.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of SENIOR REGISTRAR in Psychiatry for duties at the General Infirmary at Leeds as Trainee Specialist in Child Psychiatry and at the Westwood Hospital, Bradford, and other associated mental deficiency colonies. The duties will be allocated as to 5 sessions at the University Department of Psychiatry at the General Infirmary at Leeds and the remainder of the time in mental deficiency clinical duties. Accommodation is available for a single person. The appointment may be non-resident in which case the person appointed should reside in Bradford. Candidates must hold the D.P.M. or equivalent qualification.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 20th January, 1955.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) Applications are invited for HOUSE OFFICER (anæsthetics). The post is recognised for D.A.

Applications to Hospital Secretary.

LINCOLN. ST. GEORGE'S HOSPITAL. (152 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) with outpatient clinic duties at the County Hospital, Lincoln, required. There are 42 orthopædic beds involved. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MAIDSTONE (near). LENHAM SANATORIUM. Mid-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from practitioners, with at least 1 years experience after full registration, for the appointment of RESIDENT ASSISTANT PHYSICIAN at Lenham Sanatorium, near Maidstone. Previous experience in tuberculosis not essential. Post vacant February, 1955. The Sanatorium has 168 Beds; is visited by Thoracic Surgeons; is 1½ hours travelling distance from London. Salary according to experience within the scale £775–£50–£1075 a year, with a deduction of £150 for residential emoluments. Appointment for 12 months in the first instance.

Applications, with the names and addresses of 2 referees, to the Physician-Superintendent, Lenham Sanatorium, near Maidstone (Telephone No. Lenham 314).

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant January, 1955. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 58 Beds at Park Hospital, Davyhulme. 1 year appointment renewable. Post now vacant.

Application forms from Secretary, Park Hospital, Davyhulme, Urmston.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the resident post of REGISTRAR attached to the E.N.T. Unit, to the Burnley and District Group of hospitals. The post offers wide experience and excellent private accommodation is available for either single or married applicants.

Applications, together with the names and addresses of 3 referees, should be addressed to the Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital.

MANCHESTER REGIONAL HOSPITAL BOARD. Non-RESIDENT SENIOR REGISTRAR in Plastic Surgery, mainly at Wythenshawe Hospital, Manchester. Good training and experience in general surgery and higher qualification essential.

Forms of application, obtainable from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, should be returned by 24th January, 1955.

MANCHESTER. ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY. MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for RESIDENT MEDICAL OFFICER (Registrar grade), vacant 18th March, 1955. Previous experience in pædiatrics essential and higher qualifications desirable. Successful applicant will be required to undertake duties in the University Professorial Unit.

Applications, stating date of birth, nationality and previous experience together with copies of 2 recent testimonials, to be forwarded to the Group Secretary at Salford Royal Hospital, Salford, 3, not later than 15th January, 1955.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR REGISTRAR to the Department of Anæsthetics, to commence as soon as possible. Whole-time, non-resident post, tenable for 12 months, renewable. Applicants must possess higher qualifications. Arrangements may eventually be made for the successful candidate to transfer to 1 of the Manchester Regional Hospitals to continue training.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 29th January, 1955.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a Maternity Unit operating temporarily in the Whitworth Park Branch of the above-named Hospital, vacant 1st February, 1955. The post is supernumerary to the establishment recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned not later than 24th January, 1955.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purposes of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st April, 1955. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 1st February, 1955.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 2 HOUSE OFFICERS (general surgery) required, pre-registration posts. Recognised for F.R.C.S. examination. Vacant 25th and 28th January, 1955.

Application forms from Secretary.

MID-GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following medical staff vacancies :—

Neath General Hospital, Neath (412 Beds)

HOUSE SURGEON, vacant 1st February, 1955.

HOUSE PHYSICIAN, vacant 1st February, 1955.

HOUSE SURGEON (obstetrics and gynæcology), vacant 8th March, 1955.

Bridgend General Hospital, Quarella-road, Bridgend (364 Beds)

HOUSE SURGEON (obstetrics and gynæcology), vacant 1st February, 1955.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

MITCHAM. CUMBERLAND HOSPITAL, Whitford Gardens, MITCHAM, SURREY. (100 Beds.) Applications are invited for the post of MEDICAL OFFICER (Registrar in tuberculosis), resident, or non-resident if within 5-mile radius of Hospital. Duties also in Thoracic Unit, St. Helier Hospital. Experience in specialty essential.

Forms of application, returnable by 21st January, obtainable from the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NEWCASTLE REGIONAL HOSPITAL BOARD.

St. Nicholas Hospital, Gosforth, Newcastle upon Tyne

REGISTRAR PSYCHIATRIST (whole-time), resident. Married accommodation. Arrangements can be made for the person appointed to take the necessary course of study for the University of Durham Diploma in Psychological Medicine.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

Newcastle upon Tyne Hospital Management Committee

SENIOR REGISTRAR SURGEON (whole-time), for Urological Unit (40 Beds), Newcastle General Hospital. Post suitable for Senior Registrar who has completed general surgical training.

REGISTRAR CHEST PHYSICIAN (whole-time), at Walker Gate Hospital, with duties in a chest clinic. House available in hospital grounds at nominal rental.

Tees-side Hospital Management Committee

REGISTRAR PÆDIATRICIAN (whole-time). Single accommodation.

REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time). Single accommodation.

South Shields District Hospital Management Committee

REGISTRAR ANÆSTHETIST (whole-time), resident or non-resident. Accommodation available. Post recognised for F.F.A.R.C.S.

Hexham Hospital Management Committee

REGISTRAR ANÆSTHETIST (whole-time), required for hospitals in the above Group.

Newcastle West Tuberculosis Administrative Area

REGISTRAR CHEST PHYSICIAN (whole-time), required for the above area, with an allocation of approximately 60 Beds at the Newcastle General Hospital (850 Beds). Single accommodation.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Winterton Hospital, Sedgefield

REGISTRAR PSYCHIATRIST (whole-time), resident.

St. George's Hospital, Morpeth (1210 Beds)

REGISTRAR PSYCHIATRIST (whole-time), resident. Single accommodation only available.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWMARKET GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (Obstetrics (14 Beds) and Gynæcology (10 Beds)), with opportunity for gaining experience in general surgery, required on 22nd January, 1955. Salary £745, less emoluments.

Applications, giving age, nationality, and qualifications, together with copies of 3 recent testimonials, to be addressed to the Physician-Superintendent.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER, duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 26th February, 1955. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 16th February, 1955. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER. Duties to commence as soon as possible. Terms and conditions of service in accordance with published regulations of the Ministry of Health, £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM. HIGHBURY HOSPITAL. Applications are invited from fully qualified medical practitioners for the post of SENIOR HOUSE OFFICER in the Obstetrical and Gynæcological Department (41 obstetrical beds, 11 gynæcological beds and a small block for puerperal pyrexia). The appointment is for a period of 12 months commencing about the middle of January. The Hospital is recognised for the M.R.C.O.G. (Obstetrics only). Previous obstetric experience required. Salary and conditions of service in accordance with the Ministry regulations.

Applications, stating age, qualifications, and experience, also nationality, with copies of 3 recent testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (360 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (pre-registration post), vacant 28th January.

Applications, with names of 2 referees, to Hospital Secretary not later than 15th January, 1955.

NORWICH. HELLESDON HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER. This Mental Hospital of 1100 Beds, including a separate Neurosis Unit, serves 3 Outpatient Departments, and 1 Child Guidance Clinic, and maintains occupational therapy, E.E.G., social workers and clinical psychologist departments. Salary £745 p.a. A flat would be available for a married man at a rental of £1 per week.

Applications, with names and addresses of 2 referees, to the Medical Superintendent.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. The following posts will fall vacant on 1st February, 1955 :—

Perth Royal Infirmary

* CASUALTY OFFICER (House Surgeon or Senior House Surgeon grade according to experience).

HOUSE PHYSICIAN for Geriatric Assessment Unit, Burghmuir Hospital (associated with Perth Royal Infirmary).

Bridge of Earn Hospital

* 3 SENIOR HOUSE SURGEONS (Fracture and Orthopædic Unit).
* 3 HOUSE SURGEONS (Fracture and Orthopædic Unit).
* 3 HOUSE SURGEONS (General Surgical Unit).

1 HOUSE OFFICER (E.N.T. Department), House Surgeon or Senior House Surgeon grade according to experience.

All Junior House Officer posts are recognised for Pre-registration Hospital Service.

Posts marked * are recognised by the Royal College of Surgeons under the regulations for the F.R.C.S.

Applications, giving age, qualifications, experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1955. There will be additional duties at the Flete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Casualty, vacant 5th February, 1955.

SENIOR HOUSE OFFICER in Surgery, vacant 4th February, 1955, at the Devonport Branch, a Surgical Unit (72 Beds). Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,

South Devon and East Cornwall General Hospital Group.

7, Nelson-gardens, Stoke, Plymouth.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for RESIDENT HOUSE PHYSICIAN (House Officer grade), pre-registration post, vacant 1st February, 1955.

Applications, &c. (1 testimonial only necessary from pre-registration applicants seeking first post), to be forwarded to the undersigned by 14th January, 1955.

J. C. FIELD, Secretary.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 177,000. Recognised for M.R.C.O.G., D.Obst.R.C.O.G., D.C.H., F.F.A.R.C.S., F.R.C.S.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE.

HOUSE OFFICER (surgical).
HOUSE OFFICERS (medical).
HOUSE OFFICER (pædiatrics).
HOUSE OFFICERS (obstetrics).

To commence 1st February, 1955. Persons appointed will perform duties at other hospitals in the Group as required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

(1) **Royal Portsmouth Hospital**

(*a*) HOUSE OFFICER for 15 pædiatric and 15 medical beds—total 30. Vacant 16th January, 1955.

(*b*) HOUSE OFFICER required in the Traumatic and Orthopædic Department (105 Beds). Duties at the Royal Portsmouth Hospital. Vacant now.

(*c*) HOUSE PHYSICIAN required (65 medical beds). Pre-registration post. Vacant 17th February.

(2) **St. Mary's Hospital**

HOUSE PHYSICIAN required (74 medical beds). Pre-registration post. Vacant 24th February.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in the Area Department of Diseases of the Chest, for duty in the Reading Chest Clinic. Starting salary within the scale will be fixed by agreement with Ministry of Health, according to qualifications and experience.

Applications, stating age and qualifications, together with names of 3 referees, should be sent to the Group Secretary at 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (374 Beds.) Applications are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st March, 1955. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female), for the post of RESIDENT JUNIOR HOUSE SURGEON (general surgery), vacant 21st February, 1955, for a period of 6 months. Salary £425–£525, according to experience, less £125 board-residence.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.), vacant 21st February, 1955. Salary £425–£525 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

REDHILL COUNTY HOSPITAL. Redhill Group HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Obstetrics and Gynæcology. Whole-time resident appointment recognised for M.R.C.O.G., in unit of 52 maternity, 23 gynæcological beds.

Application forms from Group Secretary, Earlswood Mount, Redhill, Surrey.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOSPITAL. (1143 Beds.) BOARD OF CONTROL. REGISTRAR at above Hospital for mental defectives with conduct disorders. Post offers exceptional opportunity for study of and research into psychopathic behaviour and delinquency. Hospital is modern and recognised for D.P.M. in mental deficiency. Applicants must be registered medical practitioners. Previous experience in general psychiatry an asset. Appointment on National Health Service conditions of service and superannuation regulations. Furnished quarters, attendance and food, or house on estate, provided at appropriate charges.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments and names of 3 referees, to Medical Superintendent, Rampton Hospital, Retford, Notts, by 29th January, 1955. Envelope to be marked A/R. Canvassing in any form leads to disqualification. Candidates may visit Hospital by appointment with Medical Superintendent.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit from 26th January, 1955. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as early as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT SENIOR HOUSE OFFICER in Anæsthetics required from mid-February, 1955. Post recognised for F.F.A.R.C.S. Excellent opportunities exist at this Hospital for gaining tuition and experience in the administration of anæsthetics. The equipment is the most modern available.

Apply, giving full particulars, to Group Secretary, Oldchurch Hospital, as soon as possible.

ROTHERHAM. DONCASTER GATE HOSPITAL. (161 Beds. Recognised for the D.A.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Post becomes vacant 2nd March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of RESIDENT HOUSE SURGEON for a period of 6 months from 6th March, 1955. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 19th February, 1955, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment of SENIOR REGISTRAR in Obstetrics and Gynæcology, at Bangour Hospital, Broxburn, West Lothian. The person appointed will be required to reside in Hospital. The post is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 29th January, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Anæsthetics based at the Royal Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 31st January, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in E.N.T. Surgery based at the Royal Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 31st January, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Obstetrics and Gynæcology based at Stobhill Hospital, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 31st January, 1955.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications are invited for the non-resident post of REGISTRAR in Neurosurgery at the above Hospital.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, before 7th March, 1955.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications invited for the non-resident post of SENIOR REGISTRAR in Neurosurgery at the above Hospital. An appointment was recently made to this post but the successful applicant has since obtained a Consultant post elsewhere and has therefore withdrawn.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent before 7th March, 1955, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. CITY GENERAL HOSPITAL. Department OF PATHOLOGY GROUP LABORATORY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (clinical pathology) vacant 1st February, 1955. Resident accommodation is available and optional. Opportunities for training in morbid anatomy, biochemistry, hæmatology and bacteriology. The work at this and the associated hospitals offers excellent experience to graduates who wish to make pathology their permanent career. The post is recognised for the D.Path.

Apply, giving details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. LODGE MOOR HOSPITAL. (496 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (infectious diseases) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SCUNTHORPE, LINCOLNSHIRE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for RESIDENT HOUSE SURGEON (Senior House Officer) end of January—combined post general surgery and gynæcology.

Applications, naming 2 referees, to Group Secretary.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. (2285 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (psychiatric), resident or non-resident, for 1 year in the first instance, at Shenley Hospital, 16 miles from London. Opportunity for work with neurotic as well as psychotic patients, and full facilities for D.P.M. training. The Hospital may be visited by appointment.

Applications to the Medical Superintendent.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. The following Resident House Officer posts become vacant on 1st March :—

St. Helens Hospital (196 Beds)
HOUSE SURGEON.

Whiston Hospital, Prescot (892 Beds)
HOUSE PHYSICIAN.
HOUSE SURGEON (general).
HOUSE SURGEON (orthopædic).

All the above posts are recognised for Pre-registration Service.

Applications, stating age, date of qualification and experience, and giving 2 names for reference, should be forwarded to the Secretary, Group Office, Whiston Hospital, Prescot, immediately.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (medical) required. Post vacant 12th January. Recognised for pre-registration experience.

Applications, with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (general surgery) required, vacant shortly. Hospital recognised for F.R.C.S. examination, and post recognised for pre-registration.

Apply, with copy testimonials, stating age, nationality and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required. This is a new post and recognition for M.R.C.O.G. and D.Obst.R.C.O.G. has been applied for (2 House Officer posts already recognised).

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOCKPORT INFIRMARY. (163 Beds.) Applications are invited for 3 HOUSE SURGEON (pre-registration) posts. General Surgery and Ophthalmology (recognised for the F.R.C.S. and D.O.M.S.); General Surgery and E.N.T. (recognised for the F.R.C.S. and D.L.O.); General Surgery and Gynæcology (recognised for the F.R.C.S.). All posts vacant mid-January.

Applications, stating age, qualifications, and experience, together with copies of 2 testimonials, to be addressed to the Group Secretary, 59B, Shaw-heath, Stockport, Cheshire.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic). Required for the above Hospital (Orthopædic Unit 74 Beds) in January. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible, to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for 2 appointments as Whole-time REGISTRARS in Chest Diseases to fill vacancies in the approved trainee establishment at Preston Hall Hospital, British Legion Village, Maidstone, Kent. The appointments will be for work in general tuberculosis and will provide experience with a major Surgical Unit and also at chest clinics. Candidates must have had good experience in general medicine and in the diagnosis and treatment of pulmonary tuberculosis in adults. The appointments will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 22nd January, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment as RESIDENT SURGICAL OFFICER to fill a vacancy in the approved establishment at the Dartford Group of hospitals, as from 1st April, 1955. The salary will be £965 p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 22nd January, 1955.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. SENIOR HOUSE OFFICER required for Obstetric and Gynæcological Department. Preference given to applicants with general and obstetric experience.

Applications, stating age, experience, and qualifications, with testimonials, to Hospital Secretary before 21st January.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department.

Applications, stating age, qualifications, with names of 2 referees, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum SENIOR HOUSE OFFICER (gynæcology) required.

Applications, stating age, experience and qualifications, together with 2 testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. SENIOR HOUSE OFFICER (medical) required for post vacant 1st February.

Applications, stating age and qualifications, with 2 testimonials, to Hospital Secretary before 14th January.

SULLY HOSPITAL, Sully, Penarth, Glamorganshire. (324 Beds.) THORACIC CENTRE. CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical) required to commence 1st March, 1955. Experience gained in investigation and treatment of lung and heart conditions.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. VICTORIA HOSPITAL, SWINDON. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics) for the Swindon hospitals. Post is recognised for the D.A. Approved salary, conditions, &c.

Apply, with copies of 3 recent testimonials, to Secretary, 7, Okus-road, Swindon.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. RESIDENT SURGICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 23rd January.

TAUNTON HOSPITAL MANAGEMENT COMMITTEE. TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of HOUSE OFFICER (general surgery), vacant from 15th January, 1955. (Recognised for pre-registration candidates.) Recognised for the F.R.C.S.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for RESIDENT HOUSE PHYSICIAN (Male or Female), recognised for pre-registration. National Health Service terms and conditions. The appointment offers a wide and comprehensive experience in general medicine, including acute medical, pædiatric, and infectious diseases. Staffing of the Medical Unit consists of a Registrar, Pædiatric Senior House Officer, and 2 House Physicians.

Applications should be forwarded to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WELSH REGIONAL HOSPITAL BOARD.

SENIOR REGISTRAR (psychiatry), Morgannwg Hospital, Bridgend (all modern treatments, active outpatient clinics, Child Guidance Clinic and Psychological Department). Accommodation available.

REGISTRAR (obstetrics and gynæcology), Llwynypia Hospital, Rhondda (resident).

REGISTRAR (general surgery) (resident/non-resident), Morriston Hospital, Morriston, near Swansea.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WORCESTER ROYAL INFIRMARY. Applications invited for post of RESIDENT ANÆSTHETIST (Senior House Officer status) now vacant and tenable for 1 year. The post is recognised for the Diploma in Anæsthetics and the holder may expect to gain a great deal of experience with emergency work.

Applications, with copies of 3 testimonials, to be sent to the Secretary.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON required (Male or Female). Post vacant mid-February and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WIGAN (near). WRIGHTINGTON HOSPITAL. Senior HOUSE OFFICER required for 1st April, 1955, for this 352-bedded hospital which is the Manchester Regional Centre for orthopædic tuberculosis.

Apply to the Consultant Surgeon-Superintendent with 2 references.

WINDYGATES, FIFESHIRE. CAMERON I.D. HOSPITAL. RESIDENT HOUSE PHYSICIAN required for 6 months as from 1st February, 1955. The post is recognised for Pre-registration Service. The Hospital consists of 100 infectious diseases beds including 12 for treatment of tuberculous meningitis, and 30 chronic sick beds. Salary in accordance with national scale.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

WOKING AND CHERTSEY HOSPITAL MANAGEMENT COMMITTEE. ST. PETER'S HOSPITAL, CHERTSEY (460 Beds), AND ROWLEY BRISTOW HOSPITAL, PYRFORD (200 Beds). SENIOR ORTHOPÆDIC REGISTRAR required from 1st March, 1955, for above 2 hospitals with a total of 320 orthopædic beds. The hospitals may be visited by arrangement (Tels. : St. Peter's Ottershaw 441, Rowley Bristow, Byfleet 3000).

Application forms may be obtained from, and must be returned by 25th January, 1955, to, Secretary, Woking and Chertsey Hospital Management Committee, "Huntington," Chertsey, Surrey.

WOODFORD BRIDGE, WOODFORD GREEN, ESSEX. CLAYBURY HOSPITAL (for nervous and mental disorders). Applications are invited for the post of Full-time SENIOR HOUSE OFFICER (resident or non-resident). Board-residence for an unmarried applicant, for which a charge of £150 p.a. will be made, is available. The Hospital has over 2000 Beds and an admission-rate of over 1000 a year. All forms of treatment are undertaken and outpatients clinics at general hospitals are run by the Hospital staff. Clinical conferences and seminars for the D.P.M. candidates are held weekly and facilities will be offered to attend lectures in London (1 hours' journey). Previous general but not psychiatric experience necessary.

Applications, with full particulars and the names and addresses of 2 referees, to be sent to Physician-Superintendent not later than 14 days after the appearance of this advertisement.

WOODFORD GREEN, ESSEX. HARTS HOSPITAL. (100 Beds.) HOUSE OFFICER required, post vacant 26th January, 1955. The Hospital is a modern sanatorium with a Thoracic Surgical Unit and area chest clinic. The post offers exceptional opportunity for gaining experience in tuberculosis and diseases of the chest. The Hospital is close to the underground railway and within easy reach of Central London.

Applications, with copy of a recent testimonial, should be sent to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (An Associated Hospital of the University of Birmingham Medical School)

*2 HOUSE OFFICERS (general surgery), vacant early January.

HOUSE OFFICER (Ear, Throat, and Nose Department), vacant now.

Women's Hospital, Wolverhampton

*HOUSE OFFICER (gynæcological and obstetric). Appointment recognised for M.R.C.O.G. Vacant 5th February.

*Approved for Pre-registration Service.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WORKSOP. VICTORIA HOSPITAL. (127 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required with some duties also at Kilton Hospital, Worksop (190 Beds). There are 125 acute surgical beds at these hospitals and the post offers broad training in general surgery, E.N.T., orthopædic and traumatic surgery. Appointment for 1 year in the first instance.

Apply Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 17th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

East Riding General Hospital, Driffield, Yorkshire (247 Beds)

SENIOR HOUSE PHYSICIAN, vacant now. Salary £745.

Detailed applications, with references, to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved, Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md., U.S.A.

BOSTON, MASS., U.S.A. BETH ISRAEL HOSPITAL. Applications are invited for ASSISTANT RESIDENTS in Pathologic Anatomy at above Hospital, a 350-bed teaching hospital of Harvard Medical School. Appointments are open beginning 1st July or 1st September, 1955, and are renewable annually. 4-year training course approved by American Medical Association. Cash stipend plus board and residence.

Apply Pathologist, Beth Israel Hospital, Boston, 15, Mass.

Public Appointments

ROYAL ARMY MEDICAL CORPS. For new conditions and terms of service see page 34.

CIVIL SERVICE COMMISSIONERS invite applications for 9 permanent posts for PSYCHOLOGISTS at Industrial Rehabilitation Units under the Ministry of Labour and National Service ; and for 1 temporary post for a SENIOR PSYCHOLOGIST (with permanent appointment as Psychologist). Age for the Psychologist posts : at least 21 and under 31 on 1st June, 1954, with extension for Regular Forces' service ; for the Senior Psychologist post, at least 27 on 1st June, 1954.

All candidates must possess one of the following qualifications :—

(*a*) A first or second class honours degree of a recognised University in which psychology was taken as a main subject.
(*b*) A higher degree in psychology.
(*c*) A Bachelor of Education degree of a Scottish University or of the University of Belfast.
(*d*) A postgraduate Diploma in Psychology, following at least 2 years systematic study.
(*e*) Fellowship of the British Psychological Society.
(*f*) Associateship of the British Psychological Society (subject to certain conditions).

Candidates who expect to obtain 1 of these qualifications shortly after the date for the submission of applications may be considered. Exceptionally a candidate may be accepted if he has at least 3 years responsible professional experience.

London remuneration (including extra duty allowance, where payable) : Senior Psychologist £993–£1328 (men), £880–£1161 (women). Psychologist £510 (at age 21)–£1117 (men), £999 (women). Starting-pay up to £874 (men), £847 (women) at age 30 or over on entry. Promotion prospects.

Particulars and application forms from Secretary, Civil Service Commission, Burlington-gardens, London, W.1, quoting No. 118/55. Application forms to be returned by 3rd February, 1955.

FLINTSHIRE COUNTY COUNCIL. (Population 145,100.) Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH (Male), from duly qualified and registered medical practitioners holding the Diploma in Public Health or similar qualification. Salary £1450 p.a., rising by annual increments of £50 to £1700 p.a., plus a car allowance. The appointment is superannuable and the successful candidate will be required to satisfy a medical examination.

Form of application and further particulars can be obtained from the undersigned and applications should be returned not later than 25th January, 1955.

W. HUGH JONES, Clerk of the County Council.

County Buildings, Mold.

NEWPORT. COUNTY BOROUGH OF NEWPORT. DEPUTY MEDICAL OFFICER OF HEALTH, DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER AND DEPUTY PORT MEDICAL OFFICER. Salary £1166–£50–£1416 p.a.

Particulars and forms of application to be returned by 29th January, 1955, from Medical Officer of Health, Civic Centre, Newport, Mon. J. G. ILES, Town Clerk.

NORFOLK. COUNTY OF NORFOLK. The Norfolk County Council and the County District Councils concerned invite applications from registered medical practitioners holding the Diploma in Public Health for the whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND DISTRICT MEDICAL OFFICER OF HEALTH for the under mentioned area :—

Area No. 7
Downham Urban District.
Downham Rural District.
Marshland Rural District.

Apportionment of duties :—
Assistant County Medical Officer—7/11ths.
District Medical Officer of Health—4/11ths.

Combined salary scale £1363–£1618. Travelling and subsistence expenses will be paid in accordance with the County Council's scales. The person appointed will act as Assistant County Medical Officer under the direction of the County Medical Officer and as District Medical Officer of Health he will be subject to the instructions of the District Councils concerned.

Application forms, together with further particulars of the appointment, can be obtained from the County Medical Officer, 29, Thorpe-road, Norwich, to whom completed forms should be returned not later than 19th January, 1955.

NEW SOUTH WALES DEPARTMENT OF PUBLIC HEALTH, AUSTRALIA. SENIOR MEDICAL OFFICERS, Division of Mental Hygiene. Applications are invited for the above positions. Salary £A1750 p.a. Applicants must be legally qualified medical practitioners. The selected applicants may be appointed to 1 of the following Mental Hospitals : Callan Park, Rozelle ; Gladesville ; Rydalmere ; Psychiatric Clinic, Broughton Hall, Leichhardt—Located in Sydney Metropolitan Area ; Newcastle—Located 107 miles north of Sydney ; Stockton—Located 3 miles from Newcastle on the coast ; Morisset—Located 30 miles south of Newcastle ; Kenmore, via Goulburn—Located 134 miles south west of Sydney ; Orange—Located 166 miles west of Sydney. Applicants must be in possession of the Diploma of Psychological Medicine or equivalent qualifications. Previous experience in a mental hospital in a similar capacity would be an advantage. Unfurnished residence available at attractive rental for married appointees ; board and lodging available for single appointees. First-class shipping fares to Sydney of appointees and families will be paid. Appointees will be eligible, subject to medical examination, to contribute to the State Superannuation Fund.

Applications (6 copies), together with 6 copies of testimonials and other supporting documents, should be lodged at the office of the Agent General for New South Wales, 56/57, Strand, London, W.C.2, by 17th January, 1955. No special forms of application are available.

NEW SOUTH WALES DEPARTMENT OF PUBLIC HEALTH, AUSTRALIA. MEDICAL SUPERINTENDENT, Psychiatric Clinic, Broughton Hall, Sydney, Division of Mental Hygiene. Applications are invited for the above position. Salary £A2250 p.a. Applicants must be in possession of the Diploma of Psychological Medicine, have had extensive experience in treatment and care of the neuroses and psycho-neuroses and will be required to lecture and demonstrate to medical practitioners, medical students, &c., for which certain fees are paid. Residence available for married or single officer. Subject to medical fitness, appointee will be eligible to contribute to a subsidised superannuation fund. First-class shipping fare of appointee and family to Sydney will be paid.

Applications (6 copies), together with 6 copies of testimonials and other supporting documents, should be lodged at the office of the Agent General for New South Wales, 56/57, Strand, London, W.C.2, by 17th January, 1955. No special forms of application are available.

HER MAJESTY'S LEGATION AT BUCHAREST. Applications are invited for the post of MEDICAL OFFICER. Candidates should be British by birth, Male, preferably single and should for preference have surgical as well as medical qualifications. Duties would be mainly clinical and would include medical care of staff of Her Majesty's Legation and their families, together with limited number of staffs of other diplomatic missions in that city. Appointment would carry (*a*) taxable salary of between £760 and £1230 p.a. depending on the candidate's age ; (*b*) non-taxable allowance at present amounting to about £1215 p.a. A rent allowance to cover cost of furnished accommodation would be provided. Appointment which would carry diplomatic status, would be for 1 year in the first instance.

Write, giving date of birth, education, full details of qualifications and experience of posts held (including dates), to E.F. 534, Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, W.C.1, by 31st January, 1955. No original testimonials should be sent.

SURREY COUNTY COUNCIL. Appointment of Assistant MEDICAL OFFICER. Applications are invited for this full-time appointment. Applicants should possess either the D.P.H. or D.C.H. The main duties will be in connection with the School Health and Maternity and Child Welfare Services. Salary according to experience on the grade £950–£50–£1300 p.a. The appointment is subject to satisfactory medical examination, to the provisions of the Local Government Superannuation Acts, 1937–1953, and to 3 months notice on either side.

Application form from the County Medical Officer, County Hall, Kingston-on-Thames, to be returned by 22nd January, 1955.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time ; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :

ENGLAND AND WALES

Askern, Campsall, Norton and Womersley (Doncaster).
Harrogate (Harrogate).
Surbiton (Kingston-on-Thames).
Leeds S.E. (Leeds).
Ventnor (Ventnor I. of W.).

SCOTLAND

Barrhill and Pinwherry (Girvan).

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. Appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male or Female). Applications are invited from registered medical practitioners for the above permanent appointment. Preference will be given to those holding the D.P.H. or D.C.H. and with previous experience. Salary and conditions will be in accordance with the Whitley Council. The candidate will be required to provide a motor-car in the performance of duties, for which Whitley Council scale allowances are payable.

Further particulars (including details of area and duties) and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 28th January, 1955.

L. EDGAR STEPHENS, Clerk of the Council.
Shire Hall, Warwick, 30th December, 1954.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy"

DUMFRIESSHIRE EXECUTIVE COUNCIL. Applications are invited for succession as from 1st April, 1955, to a Rural Medical Practice at Thornhill (resignation of Dr. J. Watson). Approximately 2000 persons on list. House and surgery may be available. Further particulars may be obtained from the undersigned, with whom applications by letter, stating age, qualifications and experience, together with the names of 3 referees, should be lodged by 22nd January, 1955.

35, Castle-street, Dumfries. WILLIAM DODDS, Clerk.

BRADFORD, YORKSHIRE. Applications invited for VACANCY (urban district). List at present approximately 2450. Residence and surgery available. Apply on E.C.16A before 22nd January, 1955, to—

S. G. HEMMS, A.C.I.I., Clerk, Bradford Executive Council.
Bank House, 30A, Manor-row, Bradford, Yorks.

WEYBRIDGE, SURREY. Applications invited for death VACANCY in above Urban area. List about 2300. Residence, including surgery, may be available. "Intermediate" area. Applications on Form E.C.16A to reach the undersigned on or before 26th January, 1955.

S. H. BENNETT, Clerk, Surrey Executive Council.
187, Ewell-road, Surbiton, Surrey.

Hospital Services : Non-Medical Appointments

DUMFRIES. CRICHTON ROYAL MENTAL HOSPITAL. BIOCHEMIST (Senior grade—non-medical) required. The successful candidate will be in charge of the routine work in the Hospital's Laboratory but his main duty will be research work carried out under the Director of Clinical Research. Salary in accordance with Whitley scales, viz. : £835–£40–£1035–£25–£1060–£20–£1080. Small house available.

Applications, stating qualifications, age and experience, together with the names of 2 referees, should be sent to the Physician-Superintendent.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Applications are invited from registered medical practitioners for the post of part-time Medical Officer to the Avonmouth mill of The British Oil and Cake Mills Ltd. Amount of time to be spent in the mill will be 6 hours per week. Salary £450 p.a. The successful candidate will be required to undertake all the duties of an industrial medical officer at the mill. Candidates, who should preferably be within the age-group 29–42, should have attained a high standard of ability in clinical medicine and this should be combined with interest in and experience of preventive and/or industrial medicine.

Applications, giving full details of age, qualifications, training, and experience, accompanied by the names of 3 people from whom references can be obtained, should be submitted not later than 29th January to the Principal Medical Officer, UNILEVER LIMITED, Unilever House, Blackfriars, London, E.C.4.

Applications are invited from registered medical practitioners for the appointment of part-time Visiting Medical Officer to an Old Age Home accommodating 168 men and women including 48 infirm, but these numbers will be increased to approximately 250 within the next 2 years. 2 sessions weekly in addition to being on-call in case of emergency. There is a resident trained nursing staff on duty. Salary £200 p.a., plus fees from National Health Service.

Applications, stating age, nationality, qualifications, previous appointments, together with names and addresses of 2 referees, should be forwarded to the Secretary, Home for Aged Jews 105, Nightingale-lane, S.W.12.

Woman with secretarial and executive experience, widely travelled, requires position as Secretary-Receptionist in London. —Address, No. 994, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Personal services—Reasonable terms for : (*a*) Medical shorthand typing—occasional/regular engagement ; (*b*) Holiday/Sickness relief—quotations hour/day/week ; (*c*) Copy-typing theses, testimonials, &c.—Telephone provisionally WELbeck 6419. 9.30 A.M.–5.30 P.M.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Consulting-rooms available in Harley-street.—D. Pinto & Co., 15, Dover-street, W.1 (HYDe Park 2244).

W.1 (close Portland-place) suitable for residence and practice. Exceptionally attractive new maisonette to be let unfurnished. Large lofty rooms ; excellent cupboard space, modern appointments.—For further details apply : ALLIANCE PROPERTY COMPANY, 12, Carlos-place, W.1 (GRO. 3968).

Manchester. Premises at end of St. John-street com-prising 3 ground-floor offices, 2 first-floor offices, 2 second-floor offices. Total floor area 1260 square feet. Very suitable indeed for a group of specialists who are prepared to share this self-contained and compact accommodation. Rent £450 p.a. R.V. £138.—W. H. SUTTON & SONS, 60, Spring-gardens, Manchester, 2.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology. Biochemistry. Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Austin. The new Show Models A.30, A.40, A.50 and A.90. Limited number of deliveries to proven essential users.—Application form, brochures, easy terms, from Austin House, 140/144, Golders Green-road, Golders Green, London, N.W.11.

Live Leeches always in stock.—Apply : R. Brooks & Co., Viaduct House, Farringdon-street, E.C.4.

Gramophone record cabinets from £5 10s. Write for illustrations. Easy Payments.—A. L. STAMFORD (Dept. H.21), 20, College-parade, Salusbury-road, London, N.W.6.

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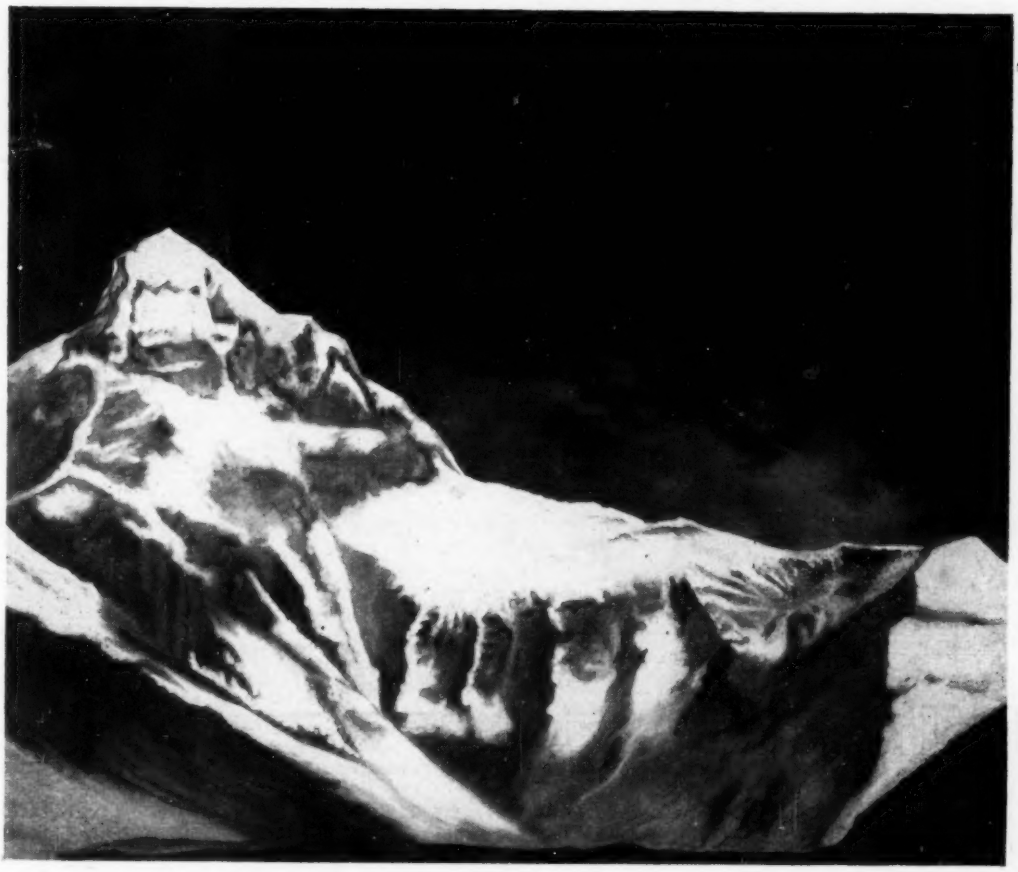

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BENADRYL, probably one of the most potent histamine antagonists, has proved to be of great value in the treatment of hay-fever, urticaria, vasomotor rhinitis, angio-neurotic oedema and, in the majority of cases, gives long looked-for relief in the skin infections and pruritic conditions associated with allergy. The Parke Davis range of products which include Benadryl provide for oral administration, topical and ophthalmic application and a solution for injection where, in acute allergic conditions, rapid action is required.

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CALADRYL
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BENADRYL OPHTHALMIC
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BENADRYL EMPLETS
BENADRYL PARENTERAL
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